The Committee for Promoting and Institutionalizing Digital Markets in Israel

An Interdepartmental Committee of the Israel Securities Authority

January 2020

Israel Securities Authority

Executive Summary

In accordance with its strategic program to promote innovation in the capital market, the ISA is taking action in multiple channels to develop an advanced, innovative, and attractive capital market for the retail investors and corporations. The ISA promotes the adoption of innovative technologies that offer potential benefits to the public by cutting costs, enhancing access to the capital market, and generally improving the financial services sector in Israel.

In view of the above, on July 2, 2019, **ISA Chair Ms. Anat Guetta** appointed an interdepartmental committee to promote and institutionalize digital markets in Israel ("the Committee"). The Committee focused on platforms for issuing, trading, clearing and settlement based on distributed ledger technology (DLT), and on the typical features of this technology, including the use of tokens and smart contracts.

Globally, DLT is being used as a base for new initiatives by traditional financial organizations including international banks, major exchanges, and securities clearing houses, in their efforts to discover use cases for the technology's assimilation in the capital market. Their ultimate aim is to enhance the securities value chain, which is the focus of this report. Evidence shows that the trading and settlement platforms that have made relatively rapid progress were established as secondary or alternative trading platforms (e.g., ATSs in the US, and MTFs in the EU) by relative newcomers to the industry that consider themselves high-tech ventures aiming to compete with traditional exchanges.

As the area of digital securities trading and settlement is currently in its infancy and adoption is limited, regulators and policymakers worldwide face the challenge of how to accommodate the features of digital platforms within the existing rules that regulate traditional capital market operations. In recent years, government ministries, financial regulatory authorities, and international organizations across the world published the first position papers and guidance documents on the need to adjust and modify existing regulatory regimes to fit these new digital operations. In several countries (e.g., Switzerland), these publications led to the initial stages of new legislation and regulation. In most countries, however, regulators are focusing on study and research of issues and concerns shared by many regulators and policy makers. Many of these publications refer to topics such as holding and custody, information and cyber security, AML/CTF, settlement finality, and transparency of ex-trade and post-trade trading-related data and information. These publications by various authorities describe and analyze these challenges, yet do not necessarily include recommendations for changes in regulatory rules.

Within its work, the Committee mapped the emerging regulatory concerns related to licensing and supervision of digital trading platforms, some of which are elaborated in detail in this Report. The ISA intends to study operative steps to address these concerns.

The Committee held meetings with entities representing diverse backgrounds, including entities engaged in the business and/or technological aspects of establishing trading infrastructure, investors in digital markets, and companies that have already raised or plan in the future to raise capital using digital assets.

Based on its study and meetings, the Committee believes that DLT has the potential to advance the Israeli capital market. Assimilating this technology may reduce trading costs to end customers, reduce systemic risks to the economy, create a technological environment that encourages financial innovation, and open the capital market to classes of companies such as SMEs, which

previously refrained from financing their operations by participating in the public capital market. In view of the technology's capability to rapidly, efficiently, and reliably validate and reconcile information for multiple parties simultaneously, the Committee believes that the greatest potential benefit of DLT applications for the capital market will come from infrastructures for issuance, registration, and settlement.

In view of the uncertainty regarding entrepreneurs' use of DLT, the ISA invites local and international business entrepreneurs and technology providers to demonstrate their technological innovations (POC) to the ISA. By doing so, entrepreneurs will assist the ISA in assessing the capabilities of their initiatives and in identifying obstacles that might impede the development of digital markets in Israel.

Executive Summary

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Special thanks to the staff of the Department of Stock Exchange and Trading Platforms, headed by **Itzik Shureki**, CPA, for their support and assistance to the Committee: **Avi Abutbul, Gal Raguan, CPA; Keren Koren Bendlek, Attorney; Shani Lusana**, Attorney.

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Introduction

The past decade has been characterized by accelerated development of breakthrough technologies in the field of financial services (fintech), designed to improve access, increase efficiencies, and reduce the costs of financial services. Consumption habits of financial services have changed, and a new, younger cohort of users has entered the market – users who were born into a world where digital consumption dominates. Technological advances have shifted the power from traditional service providers to consumers and to new fintech service providers. The role of financial mediators has changed accordingly, and is expected to continue to evolve in the future. Nonetheless, these technological transformations challenge existing regulation and therefore warrant a study of how to adjust regulation and its implementation in these new circumstances.

According to the ISA's strategic program to promote innovation in the capital market, the ISA is working in multiple channels to develop a technologically advanced, innovative capital market that is attractive for both companies and investors. Within these efforts, the ISA is taking steps to promote the adoption of innovative technologies that will ultimately improve financial services in Israel, reduce costs, and enhance the public's access to services such digital bank accounts[1] and technology-based general investment advising.[2]

Despite the numerous implications of digitization, the Committee focused on platforms for issuing, trading, clearing and settlement based on distributed ledger technology (DLT) and the features typical of such technology, including the use of tokens[3] and smart contracts.[4] DLT makes it possible to confirm and update information that is rapidly, efficiently, reliably, and simultaneously accessible to multiple parties, without requiring either a central authority to manage the information or trust between the parties that use these platforms (see below for elaboration on this point).

DLT holds promise for the capital market in the fields of issuance, trading, clearing and settlement, by reducing costs and systemic risks, creating an environment that promotes innovative financial development, and opening the capital market to companies that previously refrained from participating in it. DLT technology offers additional benefits related to the securities industry value chain[5] that extend beyond clearing, settlement, and custodial services, such as increased customer mobility through more efficient KYC procedures,

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[1] Competition in the retail brokerage market - A joint study by the Competition Authority and the ISA. ISA website

[2] A novel, advanced capital market - General technology-based investment advising. LINK

[3] Tokens - Historically, this term referred to items that were privately issued and to special currencies (such as laundry tokens or video game tokens). In the context of blockchain, tokens are blockchain-based abstractions that can be owned, and represent assets, currencies, or access rights.

[4] Smart contracts - A smart contract is a set of functions coded on an DLT network. This is not a legal contract, but instead is an immutable computer code with a deterministic outcome. In other words, running the functions in the smart contract generates an identical for all participants.

[5] Securities value chain - This term is borrowed from the field of strategic business planning and refers to the process in which products go a series of activities in the organization that add value for the organization. In the context of securities, the term refers to all the activities in the process that securities go through as they are transferred between various entities, from the primary market in which the securities are issued by the firms and distributed to investors by various intermediaries, through activities on the secondary market where trading takes place on platforms that create marketplaces for buyers and sellers, and execute the transactions, to post-trading activities that include clearing and settlement, which confirm the transaction-related information and both parties to the transaction actually make their transfers (DvP), and custodian services, in which securities are recorded and held on behalf of customers. For additional information, see A SIX White Paper, The Future of the Securities Value Chain, and Oliver Wyman and Euroclear, Blockchain in Capital Markets - Discussion Notes, November 2016. LINK

and increased simplification and efficiency of proxy voting procedures.

In contrast to innovative technologies are incorporated in the capital market or promoted by the ISA, implementation of DLT is limited, despite the enormous interest of various capital market players.

Against this background, on July 2, 2019, ISA Chair Ms. Anat Guetta appointed an interdepartmental committee to promote and institutionalize digital markets in Israel ("the Committee"). The Committee was mandated to study digital operations and the application of Israeli law to these operations. Specifically, the Committee was charged with studying, investigating, and preparing a comparative review of the law in developed countries, assess the needs of the relevant market players in digital markets, and propose a regulatory regime best suited for their operations in Israel.

The Committee's work involved discussions with a large number of stakeholders and regulatory authorities worldwide, and the study of thousands of pages of text from multiple sources. The actors with whom the Committee met came from diverse backgrounds, and included entities engaged in the business and/or technological aspects of setting up trading infrastructure or investing in digital markets, and companies that have already raised or plan in the future to raise capital using digital assets overseas.[6]

It should be noted that the Committee continued the work of a previous internal committee that studied the regulation of public offerings of decentralized cryptographic assets ("the ICO Committee") and submitted its final conclusions in March 2019.[7]

The ISA is not unfamiliar with the technological and practical aspects of DLT. The ISA was one of the first securities authorities in the world, and the first governmental agency in Israel, to incorporate blockchain technology in systems that serve the bodies regulated by the ISA and the general public, such as the Yael system, the voting system, and the MAGNA system.

The purpose of the capital market is to drive the economy forward by efficiently allocating public and private funds to companies and ventures that seek external financing. Focusing on the platform without reference to the players that use the platform, such as companies, investors, and even regulators, could lead to incomplete conclusions and recommendations. The Committee therefore adopted a holistic approach to its study of digital markets and also studied whether institutional investors and service providers could legally operate on such a platform, if established, as well as the legal ramifications for companies seeking to raise capital from the public on a digital market.

The current Committee focused on the benefits that DLT technology poses when assimilated in the capital market's issuance and trading infrastructure, involving registries, clearing and settlement, and custodial services. In contrast to the ISA's previous work that focused on defining digital assets as securities, the current Committee's work focused on issuance and trading infrastructure and concerns related to the liquidity of digital securities and access of diverse classes of investors, including institutional investors, to trading in and holding of digital securities. Incorporating DLT in trading infrastructures may open the door to the technology's assimilation in other stages of the value chain—from clearing and settlement to products—and encourage financial innovation. Another benefit of assimilating DLT in the capital market's trading infrastructure is the added flexibility in new product development, eliminating the need for participants' adjustments to their databases. This advantage is the outcome of a combination of the distributed information structure that is typical of DLT and the fact that the technology is typically developed as an open source project.[8]

This focus on trading infrastructure is echoed in one of the key recommendations of the ICO Committee to examine the adjustments to extant regulation required to create a more suitable

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[6] Including meetings held by related teams, such as the Fintech Committee, which includes members of the current Committee.

[7] For the Committee's final report, see The ICO Committee final report

[8] Open source - This term is used in the software world to denote software whose source code is open and accessible to anyone wishing to use it. The code is free for use, study, editing, and redistribution to anyone. This development method effectively allows anyone to participate in the development of the software and contribute to its improvement. Also known as free software.

regulatory foundation for establishing a specific platform for trading in cryptoassets defined as securities (also known as security tokens, STs, or digital securities), with the aim of optimally addressing the inherent risks of these activities.

To complement the study of the DLT's potential added value, the Committee also reviewed the risks of adopting DLT and related new technologies and assimilating them in core processes that significantly impact the capital market.

DLT and Blockchain Technology

Blockchain is a set of technological procedures that together enable digital transactions (records) to be collectively and safety stored, read, recorded, revised, and verified in a registry shared by the network participants (its nodes[9]). A blockchain is a type of distributed ledger technology (DLT), which is a decentralized peer-to-peer ledger, in which various participants can directly access updated information in real time, communicate with each other, and act together to maintain and manage the ledger based on a set of predetermined rules.

Different types of DLT networks offer different features. Each DLT platform is constructed according to use cases. For example, some DLT networks are designed to eliminate dependence on a central authority and therefore the ledger's management is distributed among various participants, occasionally including participants with opposing interests and low mutual trust (Bitcoin is an example of a use case of this type[10]). In other networks, governance and control are performed by a single or multiple central entities with different goals, such as a desire to manage the information in a more transparent and rapid manner or a desire to transfer value to members more efficiently (an example of a use case of this type is a supply chain or shipping system). One of the key challenges in constructing a DLT-based project is to match the network's features to the project's business needs. Despite the many different options of designing a network, the following four capabilities (that are not unique to DLT) are typically combined:

Data distribution - Network participants (nodes) can save and access a copy of the information. The extent of distribution depends on the licensing model defined in the network.

Decentralization of control - Participants may revise the information according to predetermined rules. The licensing model may vary according to the business needs in each case. It is important to note that the literature is not consistent in its use of terminology related to the level of decentralization of authorizations and access to the network. Generally, a network with access limited to specific participants is known as a private network. The network is permissioned if permissions are granted to familiar and trustworthy participants to perform any or all actions (such as reading and storing the information). In the case of a permissionless or public network, no permission is required to perform those actions, and they may be performed by any network participant.

Cryptography - Cryptographic methods are used to verify participants and transactions, protect data authenticity, protect the anonymity of participants and transactions, and create an immutable sequence of transactions. Employment of these methods also varies according to the network's business needs.

Software and automation opportunities - Additional information that is necessary for updating the information or performing other trigger-dependent actions involving the information recorded in the ledger or externally may be saved alongside the target information. The use of these features is

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[9] Node is the machine that connects users to a blockchain network.

[10] The first crypto-currency and the first implementation of blockchain .For additional information on the Bitcoin network ,see Appendix A of the Interim Report of the ICO Committee ,March.2018

generally implemented through smart contracts that contain software code and automatically perform specific actions on the network.

All applications based on blockchain technology and DLT features share their developers' desire to improve an everyday operation by increasing certainty, immutability, efficiency, and confidence between individuals, between individuals and businesses, and between businesses.

A blockchain is a type of DLT network that comprises blocks of information (transactions) that are ordered in chronological order and linked by a unique cryptographic key that is the result of a mathematical procedure based on the information in the current and previous blocks. In this way, any alternation of the information contained in the previous blocks necessarily changes the keys generated in later blocks. This is also the source of the name of the technology (blockchain). Due to the blockchain's decentralized nature, any change in a recorded block requires the reconstruction of all subsequent blocks - and this is practically impossible because every network participant holds a copy of the blockchain. This feature makes the technology less vulnerable to attack risks, although it remains subject to a range of other risks, which are described below. Therefore, ensuring a high level of information security when blockchain technology is used requires a solid understanding of the technology and the risks it entails.

In this report, we use the terms DLT and blockchain interchangeably in this report, although strictly speaking blockchain is a type of DLT

Blockchain in the Securities World – A Review

DLT is most commonly used to create ecosystems that are centered around cryptoassets with various features based on records in decentralized ledgers. The most well-known cryptoasset is Bitcoin, which was launched in 2009 and transformed the discourse on DLT technology and its added value from academic research labs to the general public.

Another milestone is the launch of the Ethereum protocol[11] in 2015. The options that Ethereum protocol offers to create tailor-made smart currencies and contracts triggered the launch of a large number of cryptoassets with a diverse range of features.

Many of these cryptoassets were offered to the public in ICOs (initial coin offerings). The developers raised billions of dollars in these ICOs, making maximal exploitation of cryptocurrencies' uncommon characteristics (such as embodied utility rights, minimal disclosure requirements, and regulatory control). The new phenomenon increased the legal uncertainty surrounding cryptoassets. The number of ICOs gained momentum in mid-2017, peaked in 2018, and subsequently dwindled. Over this period, ICOs raised over USD 20 billion.

In response to the emerging phenomenon of ICOs, on August 10, 2017 then-Chair of the ISA Professor Shmuel Hauser appointed an interdepartmental committee to examine the regulation of cryptocurrency issuances to the public ("the ICO Committee"), whose final conclusions were submitted in March 2019.[12] The ICO Committee's final report focused on the applicability of the Securities Law 5728-1968 ("the Securities Law" or "the Law") to public offerings in Israel based on distributed ledgers, and to trading in cryptoassets.

Between the establishment of the ICO Committee and the submission of its final report in March 2019, the ICO market cooled somewhat, both in terms of the number of issuances and the market cap of the issued cryptocurrencies. The main reasons were apparently related to the exceptional fluctuations in cryptocurrency prices, and the lack of trust in issuers and intermediaries. At the same time, regulators in western countries published positions that many of the cryptocurrencies that raised funds from the public fall under the definition of securities. Several regulators headed by the US SEC also initiated enforcement actions against projects that raised capital through ICOs. For a description of the rise and fall of the ICO phenomenon, and additional information on the evolution of the entire cryptocurrency industry, refer to the ICO Report, including its conclusions and recommendations.

New trends related directly to the securities have emerged in recent years. These include:

C.1. Significant interest from traditional financial institutions

For the past several years, DLT has functioned as a foundation for initiatives by traditional financial entities such as international banks, securities stock exchanges and clearing houses, in their efforts to devise optimal use cases for DLT

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[11] Ethereum - This blockchain network is an open source unpermissioned public network that supports smart contracts. Ether is the digital coin used to pay fees related to the execution of smart contracts in Ethereum networks.

[12] For the Committee's final report, see The ICO Committee final report

assimilation in the capital market. The ultimate aim of these initiatives is to improve and increase the efficiency of the securities value chain, which is also the focus of this document.

Most efforts to use DLT focus on the clearing and settlement phase,[13] in view of the technology's potential to simplify and streamline existing business processes whose complexity is primarily an outcome of indirect holding systems[14] in which the securities are held by various intermediaries rather than directly by the owners or final beneficiaries. Leading financial institutions claim that simplifying processes will reduce the risks and costs of settlement and clearing.

To illustrate, a 2016 study by Goldman & Sachs[15] states that blockchain technology can reduce securities clearing and settlement costs by USD 11-12 billion in annual terms.[16] According to an article published in 2015 jointly by Banco Santander, one of the largest banks in Europe,[17] and the consulting firm of Oliver Wyman, the introduction of DLT could reduce banks' costs of use of money and security clearing and settlement systems by between USD 15 billion and USD 20 billion per year.[18] The CEO of ASX, the Australian stock exchange, a pioneer in the incorporation of DLT in its clearing and settlement systems, stated that the technology's integration in clearing and settlement processes will generate enormous savings in bank fees, which are currently necessitated by the complexity of the process and the need for participants to synchronize their ledgers.[19]

In view of the technology's early stage, it is difficult to predict whether these forecasts will materialize. Realizing the technology's potential to reduce clearing and settlement costs is strongly dependent on the degree of technological and regulatory standardization that emerges between countries and stock exchanges.

The driving force behind other initiatives that are considering the implementation of DLT in clearing and settlement is also the technology's potential to reduce financial risks. Incorporating DLT could significantly reduce the interval between a transaction's execution and its settlement, and may even allow for real-time or close-to-real-time settlement. The main feature of DLT that would make this possible is smart contracts, which are used to make a transfer of an asset (such as a security) conditional upon the existence of another asset (such as money), or to make a stock exchange transaction conditional on available funds that are "locked" for settling that transaction.

This feature has prompted regulators[20] and policy makers to adopt a proactive approach to DLT. For example, UBIN, a joint project of the Monetary Authority of Singapore (MAS)[21] and the Singapore stock exchange (SGX), conducted tests in November 2018 to implement a DLT-based delivery versus payment (DvP) system.

Another prominent project, STELLA, led by the European Central Bank (ECB) and the Bank of Japan,[22] included a feasibility study and POC[23] for

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[13] In general, clearing and settlement are processes in which a transaction executed on an exchange is finally settled, after the date on which the orders are matched in the exchange ledger and a binding transaction is created. The process begins by transmitting the details of the transaction executed on the exchange to a system. In the clearing phase, preliminary actions are performed for the final settlement, such calculation of the movements, calculation of the net amounts to be transferred, and transfer of the amounts to the appropriate systems. On the settlement date, the securities are transferred to the buyer, and the money is transferred to the seller. In the post-trade phase, securities owners' ledgers are updated to reflect the post-trade identity of the securities' owners (Proof of Ownership).

[14] For a historical description, see: "Blockchain and Public Companies: A Revolution in Share Ownership Transparency, Proxy-Voting and Corporate Governance?" Stanford Journal of Blockchain Law & Policy 2019 University of Hong Kong Faculty of Law Research Paper No. 2019/039.

[15] James Schneider, Alexander Blostein, Brian Less, Steven Kent, Infrid Groer, and Eric Beardsley. Blockchain: Putting Theory in Practice. The Goldman Sachs Group, 2016. LINK

[16] Includes repurchase agreements and leveraged loans.

[17] The fifth largest bank in Europe in 2017, based on total assets. LINK

[18] Banco Santander, Oliver Wyman, and Anthemis Group. The Fintech 2.0 Paper: Rebooting Financial Services. 2015.

[19] LINK.

[20] Central banks in their capacity as regulators of the payment systems.

[21] Monetary Authority of Singapore.

[22] LINK.

[23] Proof of Concept (POC) - This is a phase in the software development process or purchase of off-the-shelf software, especially software whose integration entails significant financial and operating implications, and is generally performed before commencing a pilot project. POC usually has a narrow focus and is not a complete test of the software. It is designed to prove that the complete solution will prove to be the optimal solution with the most significant added value for the customer's needs.

a DLT-based DvP system. The project focused only on the technical aspects of implementation and investigated the potential of representing the currency leg and asset leg on various types of DLT-based ledgers rather than representing them in a single ledger.

Reduced trade settlement times could also lead to a reduction in the collateral that clearing and settlement participants and end users are required to deposit for trading, which would reduce clearing settlement costs. However, making a stock exchange transaction conditional upon available funds and assets might worsen the position of end customers whose transactions are financed by credit granted up to the settlement date.[24] In view of these considerations, any steps to shorten settlement times should be decided in discussions with the market participants and after a study of the degree of efficiency of the credit market including the securities lending market.

Despite the anticipated problems, the ICO phenomenon has heightened awareness of the potential of the underlying technology and its potential use for promoting financial innovation and creating new business opportunities for traditional financial institutions, subject to appropriate supervision and regulation. Efforts by stock exchanges and clearing houses to establish infrastructure for a DLT network and to gain experience in the use of the technology and in smart contracts for their own needs may enable them to offer new services to their customers in the future (a kind of PaaS services[25]). The ASX announced that it would allow its customers to develop new services and products on the DLT-

based clearing and settlement system that it was implementing, and that it considered this an opportunity to grow by leveraging the experience and expertise that it gains from the use of the DLT infrastructure.[26]

Business opportunities may also arise with respect to creating access to the capital market for firms that refrain from doing so today for various reasons. The LSEG[27] and the Deutsche Börse independently initiated projects to establish a DLT-based platform for registering, issuing, and trading, designed for SMEs that are not currently listed for trade. The new platforms will give these firms access to the capital market.[28]

As noted above, in many of the studies, DLT has been tested for securities clearing and settlement applications, but there are also other projects in other securities-related applications,[29] such as implementation of DLT to increase the efficiency of KYC procedures, proxy voting,[30] or reports filed with regulators.[31]

Financial institutions' involvement in DLT is sometimes aligned with a business strategy focused on innovation and a desire to develop institutional capabilities to respond to future technologically driven changes in the financial industry. For example, the innovation and strategy divisions of SIX, a group of stock exchanges, published a white paper[32] that maps scenarios describing how new technologies including DLT will affect the securities value chain.

Initiatives by traditional stock exchanges and clearing houses are apparently being promoted in a measured and cautious manner, as is to be expected

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[24] See discussion on this topic in Anthanassiou ,Digital Innovation in Financial Services

[25] Platform as a service.

[26] LINK LINK.

[27] LINK.

[28] LINK LINK.

[29] For additional information on the contribution to additional aspects of the value chain see LINK.

[30] Following are several examples related to proxy voting:
SWIFT - Proof of concept in conjunction with the software provider SLIB and financial institutions headed by the Singapore Exchange) SGX ,(Deutsche Bank ,HSBC ,DBS ,and Standard Chartered Bank .LINK.
Broadridge announced that it successfully performed a POC on the Tokyo Stock Exchange) TSE (based on technology developed by Quorum to transfer information on the ICJ platform .LINK.
Nasdaq and the Republic of Estonia completed a successful POC that allows the public to vote electronically on a blockchain network based on e-Residency ,Estonia's electronic identity system .LINK.

[31] Cryptoassets Taskforce: Final Report.

[32] See the white paper by SIX, The Future of the Securities Value Chain. www.six-group.com/dam/download/company/report/whitepapers/six-white-paper-future-securities-value-chain-en.pdf.

when considering an upgrade or replacement of core systems that require significant regulatory stability.

In general, we can classify the development of stock exchanges' DLT-based projects into the following general categories (which sometimes reflect the project development stage). It is evident that most of the main projects involve securities clearing and settlement, and most are in the early stages of development.

1. Research, experiments, and POC testing: The calculated steps taken by traditional financial institutions to implement DLT in securities-related applications include research, feasibility studies, and experiments designed to "test the waters" from a business and a technological perspective. The results of POC tests are not always published, and information on whether the tests led to a development phase is not always available.

One of the main reasons for the focus on POCs is the stock exchanges' need to examine and adjust some of the technological features, as reflected in Bitcoin and Ethereum, that are incompatible with the operation of traditional securities exchanges and settlement systems. One such incompatible feature is the transparency of the transactions on Bitcoin and Ethereum networks, which allows all market players to view all the transactions executed by any address. This degree of transparency is not necessarily appropriate for the world of securities trading..

Another potentially incompatible feature is limited scalability,[33] which could limit the number of processed trades, which would be undesirable in securities trading. The Depository Trust & Clearing Corporation (DTCC[34]) in the United States conducted a study with Digital Asset Holding and R3, two providers of private DLT-based systems.[35]

The study showed that the DLT system has the capability of processing a significant volume of transactions (6,300 transactions per second). The study was conducted in response to the scalability concerns that characterized DLT systems that supported cryptocurrencies, and effectively demonstrated the technology's capabilities in this regard.

Additional POCs and studies were promoted by regulators[36] and policy makers who were interested in the technology's ability to reduce risks, as mentioned above. For example, the Central Bank of Chile conducted a test in 2019 with the aim of issuing government bonds and listing them for trade on a blockchain network. The results of this test are scheduled to be published in the near future.[37]

This category of POCs and studies also includes pilot studies using real money, promoted by several major banks including the World Bank, which issued USD 81 million in digital bonds (bond-i) in 2018 on a private Ethereum-based network.[38]

In September 2019, Banco Santander raised USD 20 million in bonds, jointly with Nivaura, a blockchain firm. In the press release published after the issue was completed,[39] the Bank stated that it viewed the issue as the first step toward the establishment of a secondary market (even though the bonds themselves have no secondary market). The parties involved in the pilot issue defined it a success.[40] In April 2019, Societe Generale, one of the largest banks in France, raised EUR 100 million in covered bonds registered on an Ethereum network in what was called a preliminary pilot project.[41]

2. Projects in development: Several significant entities in the securities industry commenced development on DLT-based infrastructures. One

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[33] Scalability - The number of transactions recorded on a specific block at a given time is limited as are the transaction process capabilities. As securities (or digital asset) trading is characterized by an enormous volume of trades, this technical limitation frustrates the potential use of the technology.

[34] The Depository Trust & Clearing Corporation.

[35] LINK

[36] Including central banks in their capacity as regulators of the payment systems.

[37] LINK

[38] LINK

[39] LINK

[40] LINK

[41] LINK

project in an advanced stage of development is the project to replace the ASX's current settlement system with a DLT-based system by Digital Assets Holdings. The new system will also allow the ASX and its participants to use the supplier's programing language (DAML) to create smart contracts in the future.[42]

Another notable project is the establishment of SDX, a digital exchange,[43] by the Swiss group SIX, one of the largest stock exchange groups in the world. The SDX is expected to operate as a digital exchange alongside its sister exchange, the traditional Swiss stock exchange. The major promise of this project focuses on settlement-related benefits, and especially the option of performing real-time settlement (T+0) based on DvP. The launch of the SDX was postponed to end 2020. Another project in earlier stages of development is a joint project of the Deustsche Börse and technological giant Swisscom[44] to create a blockchain-based stock exchange.

A partnership of the Hong Kong exchange and Digital Asset Holdings is also in development stages. This project aims to design a DLT system able to meet the current challenges of trading settlement between the Hong Kong exchange and Chinese exchanges.[45]

3. Fintech initiatives. To gain a foothold in DLT, various financial entities, including stock exchanges, join consortiums. One example of a joint consortium is R3, a venture that is developing Corda, a private DLT system designed for stock exchanges, among others.[46] Another initiative in this category is a joint project established by all the members of the Japanese stock exchange group

and it is designed to allow them to experiment with blockchain[47] in securities-related applications. Alongside the financial and business aspects of these joint ventures, the involvement of a large number of participants increases the probability of industry standardization.

Another way that companies become involved in the field is by investing in DLT-related start-up companies, such as the investments in Digital Asset Holdings by the Australian exchange, the USD DTCC, and the German stock exchange; or investments by LSE, HSBC,[48] and Banco Santander[49] in the blockchain firm Nivaura. Some entities prefer to lead independent development of a blockchain: JP Morgan developed a private Ethereum-based blockchain network named Quorum, also used for multiple use cases including registration, clearing, and settlement.[50]

C.2. Initiatives by new players

Alongside the steps taken by traditional financial institutions, firms that are relatively new entrants to the industry have established, or are working to establish, digital platforms for trading, clearing, and settlement. The platforms that have already been established by these firms have been constructed rapidly, with a short time-to-market, and a significant share of them are currently in operation. Examples of ventures of this type include Tzero,[51] OpenFinance (both ATSs),[52] the settlement firm Paxos,[53] a Canadian trading platform by TokenGX,[54] and projects by the 2030 Group,[55] which aims to create infrastructure solutions for the entire securities value chain. At this stage, the trading volumes on these platforms are not significant, but they have been operating for only a short

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[42] LINK

[43] LINK

[44] LINK

[45] LINK

[46] For example, the digital Swiss exchange is being developed on this network

[47] LINK

[48] LINK

[49] Through Santander InnoVentures. LINK.

[50] LINK

[51] LINK

[52] LINK

[53] LINK

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[55] The 20/30 Group is a London-based investment group.

time. In our understanding, these firms preferred to commence operations quickly and as a result, several of these initiatives are subject to various regulatory restrictions such as restrictions on operating volumes or the requirement to maintain additional records in addition to the decentralized ledger.

Another feature of these platforms is that a considerable number of them sought to raise capital for their project through a security token offering (STO), where the security tokens themselves would be registered on the platform. In addition to the financing aspect, using this method to raise capital may also be motivated by the desire to prove that the platform performs well and that its use offers added value, even before the first firm lists to trade on the platform. For example, INX Inc, which is looking to establish a secondary trading platform (ATS), is currently taking steps to perform an STO[56] with tokens that will be listed for trade on the trading platform, when it is established in the future.

In the US and the EU, several of the new trading platforms noted above are regulated as alternative or secondary trading systems. In Israel, in contrast, all types of trading systems are subject to a single regulatory regime that reflects a significant national trading system model. In general, the regulation in the US and in Europe refers to two types of multilateral trading platform that differ mainly in their branding and the scope of applicable regulation. One type of multilateral trading platform includes large national stock exchanges with very large trading volumes. These are fully regulated by the authorities and subject to strict regulation. The second type of multilateral trading includes secondary systems and trading systems of smaller entities, with typically smaller trading volumes. These systems are subject to separate regulation, with more limited supervision, and more lenient transparency and regulatory requirements.

C.3. Summary

A. Based on the above review, major global entities in the securities industry consider DLT to be a technology with significant potential, and these entities are making significant strides toward the establishment of DLT-based trading infrastructure. This conclusion is also supported by the discussions that the Committee members held with entrepreneurs, financial service providers, and technology experts. In view of the international competition in the securities trading sector, it is imperative to both identify and address the regulatory barriers that might delay DLT adoption.

B. A number of trading and settlement platforms were introduced rather rapidly as secondary or alternative trading systems (ATS) by new industry entrants that apparently considered themselves to be high-tech entrepreneurs seeking to compete with traditional stock exchanges.

C. Contrary to Israel, regulation of trading platforms is graded, based on the platforms' features. In the US, a licensing exemption may be obtained on the basis of limited trading volumes. In Israel, the provisions of the Securities Law that apply to licensing and supervision of a stock exchange were developed with a view of a significant national exchange that operates through exchange members. As a result, several of the regulatory obligations imposed on a stock exchange may impede initiatives to establish smaller trading systems.

D. It is our impression that quite a few of the leading blockchain technology companies in the field originate from Israeli initiatives. A regulatory foundation that supports the establishment of alternative trading systems might be an excellent opportunity for integrating these fintech companies into the world of financial and intermediation services, and especially into the world of securities trading.

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[56] Also includes utility elements :payment for platform use.

Digital Securities – A Comparative Review of Law

Similarly to Israel, trading and settlement of digital securities are in their infancy in most countries around the world and adoption is limited. One of the prominent features of this field is the lack of legal and regulatory clarity on many aspects related to operations involving digital securities in both primary and secondary markets.

At the writing of this report, there remain numerous questions concerning DLT's compliance with the regulatory rules that apply to the financial system, and on whether existing regulation is well suited to address the issues surrounding the use of this technology. The lack of clarity surrounding DLT use is common in many countries. Regulators and policy makers around the world are studying how to reconcile existing rules that regulate capital market operations with some of the features of operations involving digital assets. Both substantive legal issues as well as purely technical concerns have emerged.

National and international organizations have invested extensive efforts in recent years to understand and regulate ICOs and to clarify the legal classification of cryptoassets (especially whether they are currencies or securities), and the regulatory regime that applies to them. Limited attention, however, has been given to other issues, including regulation of listing, trading, and settlement in secondary markets for digital securities. **As a result, no uniform international standards of regulation for digital securities exchanges and trading systems have emerged to date**.

In this chapter, we present the current legal and regulatory status of digital securities trading, custodian, and settlement services in several countries. As this review indicates, government ministries, international organizations, and financial regulators have begun to publish position papers and advisory documents on the need for adjustments and modifications to the regulatory regime that currently applies to digital operations. **In a small number of countries, these publications have led to legislative and regulatory changes that are yet in their initial stages. In most countries, regulators are in various stages of research and study**.

This review also indicates that regulators and policy makers across countries face many similar issues. Almost all publications mention the need for effective and clear regulation on topics such as **custodian services, information security and cyber security, money laundering and terror financing, finality of settlement**, and transparency of both ex-trade and post-trade trading data and information. These challenges are described in regulators' publications in general terms, and publications do not necessarily include recommended changes to regulatory rules.

Despite the similarity in the challenges facing regulators across the world, it is possible to identify three distinct approaches to regulation related to digital securities trading. Most agencies have adopted a conservative approach that advocates the application of existing laws and regulations to trading and settlement "as is," with a slow, cautious study of any necessary changes. Other countries have adopted a more liberal approach that supports the creation of new frameworks with requirements adjusted to the technology's new features. Between these two ends of the continuum are countries that are working to apply existing regulation to which they have already made the necessary adjustments.

Table 1. Regulatory Approaches

Conservative approach	Moderate approach	Liberal approach
Application of existing rules and regulatory frameworks Future study of changes according to market developments	Application of existing rules and regulatory frameworks and specific changes and adjustments to some requirements	Development of new rules and regulatory frameworks adjusted to the new operating features

The distinction between these approaches is not always absolute or clear-cut. In view of the early stage of the digital securities industry, several countries do not fit into these categories. Future developments can be expected to clarify the trends in this field.

Below are the steps taken by regulatory organizations and agencies worldwide to address digital securities trading and settlement. **Note that this review does not address regulatory publications concerning ICOs, which were covered in the ICO Committee Report**.

A. International Organization of Securities Commissions (IOSCO)

In May 2019, the IOSCO issued a Consultation Report on Cryptoasset Trading Platforms (CTP).[57] The aim of the report was to assist its members in identifying the main risks and issues that require resolution in the regulation of these platforms' operations. The report does not include recommendations of concrete regulatory steps that its members should follow, but it determines general principles for addressing several of the concerns stemming from the operation of cryptoasset trading platforms.

According to the report, regulatory authorities that are studying the regulation and supervision of CTPs should take the following challenges and risks into consideration:

1. **Access to CTPs** - Regulators must understand the criteria for accessing a CTP and the rules and procedures that determine a participant's on-boarding. Where there is direct access to a platform (that is, where the investor trades directly with the platform, without a broker's mediation), regulators must ensure that the platform operator complies with all the AML/CFT obligations and participant appropriateness requirements that currently apply to financial intermediaries. Regulators should confirm that the access procedure is transparent, clear, and fair, and should consider whether the general investor public should have direct, unmediated access to trading.

2. **Safeguarding participants' assets** - Regulators should confirm that any assets or funds held by a CTP (or a third party) on behalf of participants are held in a safe and trusted manner. Regulators should understand how assets are held and what are the CTP's internal mechanisms and procedures for protecting these assets against risks, such as cyber-attacks, theft or loss of private keys, commingling of assets, and suspension of the CTP's operations. Regulators should also confirm that the CTP maintains accurate and auditable records. Where a CTP also provides custodian services, regulators should also consider imposing solvency requirements on CTPs to ensure their stability and to oversee capital adequacy continually.

3. **Conflicts of interest** - Regulators should examine whether there are any conflicts of interest between CTP and its investors that stem from the CTP's operating model, and how the CTP manages them. Potential conflicts of interest might arise as a result of proprietary trading by the CTP or by its employees or related parties; consulting services rendered to investors; business ties with or connections

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[57] Issues, Risks and Regulatory Considerations Relating to Crypto-Asset Trading Platforms - Consultation Report. https://www.iosco.org/library/pubdocs/pdf/IOSCOPD627.pdf.

to assets traded on the CTP (for example, to parties that performed an ICO on the CTP); or preferential treatment to specific customers or participants. Regulators should assess the CTP's policy and procedures for reducing such conflicts of interest, including their disclosure to investors, internal separation between the CTP's various operations, etc.

4. **Description of CTP operations** - Regulators should examine whether the CTP provides complete and clear information to participants on its operations, trading rules, and the use of its system. In view of the unique risks that trading in these assets entails, platforms should present clear explanations and information to participants to assist them in making informed decisions. The disclosure may apply to of any of the following elements – type of trading orders, method of determining quotations, method of collecting fees, rules to prevent trading manipulations and fraud, the technology used by the platform, rules related to correcting and cancelling orders, and information on how the platform addresses the unique risks of cryptoassets such as hard forks.

5. **Market integrity** - Regulators should examine whether a CTP has effective means of control to prevent manipulations, fraud, and market abuse, with emphasis on cryptoassets' unique risks. Regulators should examine whether existing supervisory tools adequately address the unique features of digital trading such as high volatility, continuous trading times, and absence of clear quotation mechanisms. The Report advises regulators to examine whether the traditional rules used to prevent market abuse are adequately suited to cryptoasset trading.

6. **Price discovery** - Regulators should confirm whether pre-trade and post-trade information regarding quoted prices is disclosed and transparent. Determining a fair price for cryptoassets may be more difficult and complex in view of the fact that many cryptoassets are traded on multiple platforms and/or in multiple jurisdictions, which leads to significant price differences. Regulators

should examine the information that a CTP presents to participants and how the quotation mechanism is determined.

7. **Technology** - Regulators should confirm that the CTPs' technological systems are stable and reliable, and resistant to cyber threats, which are common in the field of cryptoassets. Regulators are also advised to examine a CTP's business survivability plans, conduct any necessary stress tests, examine the quality of its critical systems (especially if they are provided by third parties), examine its decision making procedures and corporate governance, examine procedures for identifying and discovering security weaknesses, and conduct external reviews to ensure compliance with relevant technological standards.

8. **Clearing and settlement** - Regulators should understand how a CTP clears and settles the transactions, and whether the system complies with conventional regulatory requirements concerning finality of settlement and counterparty risks. Although a joint committee of IOSCO and the Bank of International Settlements (BIS) examined distributed ledger technologies' compliance with the common Principles for Financial Market Infrastructures (PFMI), and failed to identify any specific concerns, this issue should be monitored in the future.

The Report does not recommend any concrete steps that its members should take, nor does it define specific requirements that members should adopt. The solutions to these issues should be determined individually by each member, based on the IOSCO's overarching principles: (1) investor protection; (2) ensure fair, efficient, and transparent markets; and (3) reduce systemic risk. In view of the global features of cryptoassets, the Report recommends that cooperation and information exchanges between the member agencies should be tightened in order to develop a consistent, standard policy.

B. European Securities and Markets Authority (ESMA)

In January 2019, ESMA published Advice on Initial

Coin Offerings and Cryptoassets.[58] The advice addresses several issues including a clarification on the application of existing regulatory frameworks to cryptoasset trading operations, the lack of uniformity in the divergent approaches adopted by several EU members, and the non-implementation of several existing rules, which require financial regulators' review and response.

Application of existing regulation – It is EMSA's position that operations involving cryptoassets constitute financial instruments that are regulated under MiFIR and MiFID ("MiFID II"), the recently revised European regulation on financial markets. For example, platforms that support multilateral cryptoasset trading must obtain an appropriate license for their operations under one of the frameworks that exist in European regulation: Multilateral Trading Facility (MTF), Regulated Market (RM), or Organized Trading Facility (OTF). Similarly, advisory or similar services to customers require an Investment Firm license. ESMA clarifies that when trading involves financial instruments, it is subject to the conventional rules pertaining to the prevention of market abuse, manipulations, and fraud. Furthermore, settlement of transactions involving cryptoassets that are defined as transferable securities must be registered with an authorized Central Securities Depository (CSD).

Certain cryptoassets do not fall under the definition of a financial instrument and therefore are not subject to MiFID II. It is ESMA's position that the absence of financial regulation for unregulated assets exposes investors to significant risks, and the organization calls its member countries to consider possible ways to address these risks. ESMA also expressed concern over the regulatory gaps between EU countries, which are implementing different tests for defining financial instruments, and creating different regimes for assets that are not subject to MiFID II. ESMA believes that these differences may create a lack of standardization and undermine the shared goal of creating a level playing field for all EU countries.

Gaps and difficulties in implementing existing regulation – The Advice points to a series of challenges in applying existing regulation to cryptoassets that are defined as financial instruments and are subject to MiFID II. ESMA calls the NCAs (National Competent Authorities [of member states]) to take steps to clarify the following issues under their responsibility:

• Create certainty regarding the implementation of custody/safekeeping rules, including an assessment of the technical changes required in some of the traditional requirements, to ensure their compatibility with DLT;[59]

• Disclosure, report, and transparency of trading – Ensure that the existing rules are suitable for cryptoassets that have hybrid features or do not necessarily represent equity or debt rights;

• Market manipulation – Ensure that the existing rules adequately address all the risks that cryptoassets trading entails;

• Technical standards – Assess required changes and adjustments to the technical standards related to data storage and reports (e.g., ISO 4217,[60] ISO 10962,[61] ISO 6166[62]);

• Create certainty regarding the settlement process – Assess how to address the role of miners who verify transactions, based on Central Securities Depositories Regulation (CSDR) and the European Settlement Finality Directive (SFD) and consider distinguishing between decentralized and centralized DLT networks.

Handle specific risks arising from DLT – Ensure that the use of smart contracts and relevant protocols meets an appropriate standard of stability, reliability, and cyber protection, and ensure that existing regulation adequately addresses these risks in view of the field's technological immaturity.

In conclusion, ESMA advises EU countries to take steps to create a uniform interpretation of the definition of a financial instrument, and requests that NCAs increase their use of warnings to the

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[58] www.esma.europa.eu/sites/default/files/library/esma50-157-1391_crypto_advice.pdf

[59] See SEC and FINRA publication above.

[60] www.iso.org/iso-4217-currency-codes.html

[61] www.iso.org/standard.44799/html

[62] www.isin.net/iso-6166/

general public regarding investments in assets that are currently unregulated.

C. United States

According to the position of the US SEC, operations involving cryptoassets that constitute securities are subject to federal securities laws and their regulations. In a series of publications, the SEC clarified that entities operating as intermediaries in the secondary market of assets that constitute securities must comply with existing regulation, including registration requirements.

In a statement dated March 2018, the SEC clarified that platforms that offer trading in cryptoassets or create a marketplace that brings together buyers and sellers, must register with the SEC as a national securities exchange or as an alternative trading system (ATS), irrespective of the technology that they employ.[63] The SEC further clarified that entities involved in trading in secondary markets of digital securities may be considered broker-dealers and are therefore subject to a registration requirement and must operate under the appropriate license. Based on this position, the SEC has applied enforcement measures against unregistered platforms (e.g., EtherDelta) and firms engaged in brokering and distributing digital securities (e.g., TokenLot) without registering as an exchange or a broker-dealer, respectively.[64]

On July 8, 2019, the SEC and the Financial Industry Regulatory Authority (FINRA) issued a joint statement on broker-dealer custody of digital securities.[65] The statement clarifies that broker-dealers (including broker-dealers who operate as an ATS) who hold cryptoassets for their customers are subject to the Customer Protection Rule,[66] which is designed to guarantee the protection of customers' securities and assets in the event of a broker's insolvency, liquidation, or other default. The SEC and FINRA listed the unique features of cryptoassets that potentially hinder broker-

dealers' compliance with the Customer Protection Rule regarding their holdings. These features include the inherent risk in holding private keys of customers' assets, where loss of the keys might cause a loss of the assets; the difficulty in invalidating a transaction in the event of fraud, theft, or even error; and the difficulty in recovering lost assets. The staff of these agencies noted that they maintain a dialogue with the market in order to examine technological solutions to reduce these risks and facilitate compliance with regulatory requirements.

Another obligation that applies to broker-dealers is the requirement to maintain precise internal ledgers and records of securities holdings, and to prepare audited financial statements.[67] The SEC and FINRA teams acknowledged that specific challenges might arise in proving the existence of digital securities. According to the joint statement, broker-dealers should consider how the nature of DLT and the use of new technological solutions affect their ability to meet their regulatory obligations.

On October 28, 2019, the SEC issued a no-action letter to Paxos, a firm that intends to operate a settlement system for securities transactions based on a private decentralized ledger. According to the facts outlined in the letter, Paxos intends to conduct a feasibility study of clearing and settling securities using a permissioned DLT system, without registering as a clearing agency. The SEC staff informed the firm that it recommends that no enforcement action be taken against it as long as the system operates provisionally for two years at limited trading volumes.[68]

On October 11, 2019, the SEC issued a statement that the Boston derivatives exchange BOX issued a proposal to amend the rules of the exchange in order to allow trading in security tokens. The amendment would allow the exchange to list shares that are listed on the Ethereum network (in

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[63] www.sec.gov/news/public-statement/digital-asset-securites-issuuance-and-trading www.sec.gov/news/public-statement/enforcement-tm-statement-potentially-unlawful-online-platforms-trading

[64] www.sec.gov/news/press-release2018-185/

[65] www.sec.gov/news/public-statement/joint-staff-statement-broker-dealer-custody-digital-asset-securities

[66] The Customer Protection Rule was established in Section 15 c3-3 of the Securities Exchange Act.

[67] See sections 17 a17 ,3-a17 ,4-a ,5-of the Securities Exchange Act.

[68] www.sec.gov/divisions/marketreg/mr-noaction/2019/paxos-trust-company102819-17-a.pdf

addition to traditional listing on CSD).[69]

D. Canada

In March 2019, the Canadian Securities Administrators (CSA), which is the umbrella organization of securities authorities in Canada, published a consultation paper on regulation for cryptoasset trading platforms jointly with the Investment Industry Regulatory Organization of Canada (IROC).[70] The consultation paper addresses the diverse regulatory frameworks that apply to participants in the secondary market – exchanges, alternative trading systems (ATSs), broker-dealers, custodians, and clearing houses.

According to the CSA, cryptoassets that constitute securities are subject to regulatory oversight under the provisions and rules of Canadian securities laws. Nonetheless, the CSA believes that special provisions should be added to regulate the novel aspects of cryptoasset trading that are not currently covered by the regulation of traditional securities. The CSA points to the need to examine the following issues: safeguarding investors' assets, price determination, control of trading operations, business continuity and operating system requirements, conflicts of interest, insurance, and clearing and settlement.

Several enforcement actions were taken against unregistered platforms that offered cryptoasset trading. For example, the Ontario Securities Commission (OSC) reached a settlement in July 2019 with CoinLaunch, after the trading platform violated local securities laws and engaged in security token trading without a license.[71]

In late October 2019, the OSC granted temporary relief sought by TokenGX, a start-up company.[72] The provisional exemption from licensing as a secondary trading platform, publishing a prospectus, and specific trading rules will allow TokenGX to conduct a pilot test of trading in tokens that are defined as securities in a secondary market. Trading will take place on FreedomX, a platform developed by TokenGX, and will be limited to dealers who are Ontario residents and approved by the company as accredited investors.

E. Switzerland

In December 2018, the Federal Government of Switzerland published a report by a team of experts who studied the legal and regulatory implications of DLT use. The team concluded that changes and adjustments to legislation are warranted in order to address the unique features of implementing DLT in financial markets more thoroughly and effectively.[73] In March 2019, the Swiss ministries of justice and finance published a memorandum of law for public comments on this issue, and on November 27, 2019, a decision was made to bring the proposed legislation for the Parliament's approval.[74]

The proposed amendment to the law establishes the legal status of digital securities as equal to the status of ordinary uncertified securities. It was also proposed to determine a new specific licensing framework for DLT-based platforms – DLT Trading Facility. The proposed license permits the platform to use the novel technology to combine the ex-trade and post-trade stages into a single trading stage, and to perform additional actions such as clearing and custodian services, which are currently not permitted to traditional trading facilities. Furthermore, in contrast to traditional exchanges, DLT Trading Facilities will be permitted to accept individual investors and entities that are not regulated financial entities as participants.[75]

F. Germany

In September 2019, after public comments, the German government published a strategic program

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[69] www.sec.gov/rules/sro/box/2019/34-87287.pdf

[70] www.securities-administrators.ca/uploadedFiles/Industry_Resources2019/mars14-21-402-doc-cons-en.pdf

[71] www.lexology.com/library/detail.aspx?g=a92a86e3-a148-4a2e9908-9-ee109ce10e2&utm_source=lexology+daily+newsfeed&utm_medium=html+e-mail+-+body+-+general+section&utm_campaign=lexology+subscriber+daily+feed&utm_content=lexology+daily+newsfeed&2019-08-19+utm_term

[72] www.osc.gov.on.ca/documents/en/ord_20191023_tokengx.pdf

[73] www.admin.ch/gov/en/start/documentation/media-releases.msg-id-73398.html

[74] www.admin.ch/gov/en/start/documentation/media-releases.msg-id-77252.html

[75] www.baerkarrer.ch/publications/BK%20Briefing-Swiss%20Federal%20Council%20Proposes%20Revisions%20to%20the%20Legal%20and%20Regu-latory%20Framework%20Governing%20DLT%20and%20Blockchain%20Applications_final.pdf

to promote the use of blockchain technology in the country's economy.[76] The program includes recommended amendments to German legislation that will increase regulatory certainty regarding the use of the technology until a uniform European framework is developed. The recommendations presented in the program include recognition of the legal status of securities registered in decentralized electronic ledgers (initially for bonds only, and subsequently for shares), and specific regulation on the issuance of cryptoassets that do not constitute securities. The recommendations are subject to implementation into law.[77]

In July 2019, BaFin, the German financial regulator, approved a prospectus of bonds registered in the Ethereum network. This was the first public offering of securities based on a decentralized ledger.[78]

In November 2019, the German Parliament approved a bill that imposes licensing and supervision requirements on all cryptoasset service providers, including trading platforms. The bill defines cryptoassets as "financial instruments" whose operations are regulated by existing regulation. The bill establishes the BaFin's interpretation and view of payment tokens such as Bitcoin and others as financial instruments, which implies that cryptoasset trading platforms will be required to comply with the obligations that apply under MiFID II to trading platforms for financial instruments, including capital requirements and rules related to disclosure and market abuse.[79]

G. France

PACTE, a law approved in April 2019, includes a voluntary regulatory framework for issuers and service providers of digital assets that are not financial instruments as defined in MiFID II. PACTE covers the operations of digital asset service providers, including custodian services, purchase and sale, investment management, trading platform operation, and other services involving these assets. Service providers who elect to operate according to the voluntary license will be required to comply with provisions concerning cybersecurity, investor protection, transparency and discovery, prevention of conflicts of interest, and other rules. The voluntary license does not invalidate the effect of AML/KYC rules that will continue to be mandatory. In December 2019, the French Autorité des Marchés Financiers (AMF) published the rules for service providers who request a license under the new law. Firms operating at the end of December 2019 will be given a 12-month period to register with the AMF, while firms that were not yet operating on that date will be able to submit a license application only from early 2020 onward.[80]

H. Italy

In March 2019, the Commissione Nazionale per le Societá e la Borsa (CONSOB) issued a consultation paper on regulating operations involving cryptoassets and ICOs. When a digital asset constitutes a financial instrument according to the definitions in MiFID II and MiFIR, it is subject to existing provisions and rules. CONSOB proposes a new regulatory framework for platforms for cryptoassets and ICOs that do not fall under the definition of a financial instrument. Similar to the situation in France, the new regulatory framework will be voluntary, and firms that offer digital asset trading services may elect whether to obtain CONSOB approval or operate without such approval. The new framework offers special directives that will apply to crypto-asset exchanges with the aim of ensuring fair trading and preventing market abuse. The directives address registration, disclosure, trading risk management, resolving conflicts of interest, and include rules pertaining to custodian services.[81]

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[76] For the complete report in German, see www.bmwi.de/Redaktion/DE/Publikationen/Digitale-Welt/blockchain-strategie.pdf?__blob=publication-File&v=10

[77] For a review of the report, see www.linklaters.com/en/insights/blogs/fintechlinks/2019/september/germany-paves-the-way-for-dlt-securities

[78] www.coindesk.com/german-regulators-approve-280-million-ethereum-token-sale

[79] www.dentons.com/en/insights/alerts/2019/november/29/new-german-rules-on-cryptoassets?utm_source=Mondaq&utm_medium=syndica-tion&utm_campaign=View-Original

[80] www.amf-france.org/eli/fr/aai/amf/rg/20180608/notes/en.pdf   www.amf-france.org/en_US/Reglementation/Doctrine/Doctrine-list/Doctrine?do-cId=workspace%3A%2F%2FSpacesStore%2F48c56b43-5878-41b5-bc6d-8e14806ad56f&category=III+-+Providers

[81] www.consob.it/documents/46180/46181/doc_disc_20190319_en.pdf/e981f8a9-e370-4456-8f67-111e460610f0

I. Hong Kong

In November 2018, the Securities & Futures Commission of Hong Kong (SFC) published its regulatory policy on digital assets.[82] Operations involving digital assets that are securities or futures, as defined in the Securities and Futures Ordinance ("SFO"), will be subject to SFC regulation. The SFC nonetheless proposes a new regulatory framework for digital asset trading platforms that are not necessarily defined as financial instruments under SFO, yet wish to be regulated by the SFC in order to distinguish themselves from unregulated platforms. In November 2019, the SFC published a revised position paper on the regulation of digital asset trading platforms, including a revised statement on the licensing requirements that apply to platform operators.[83] Beginning from November 2019, operators of trading platforms for virtual assets in Hong Kong that wish to be regulated by the SFC must offer at least one type of token considered a security, and are required to submit an application to the SFC for a license. This license places the platform's operations under the supervision of the SFC and as a result, the platform must comply with SFC rules including the code of conduct that applies to all entities registered with the SFC, minimal capital requirements, risk management procedures, and other requirements. Notably, this regulation allows platforms to render services only to professional investors, as defined in the law. Furthermore, regulation of the platform does not imply regulation of the assets traded on the platform, and does not impose a requirement to publish a prospectus or make other disclosures concerning assets that are not deemed securities.

J. Singapore

In 2017, the Monetary Authority of Singapore (MAS) published a guide on digital asset issues and the operations of financial intermediaries, which include operators of trading platforms for assets that meet the definition of a financial instrument in the Securities and Futures Act (SFA). Operators of digital asset trading platforms may be considered to be operators of what the law defines as an organized market. Organized market operators in Singapore are required to obtain MAS approval to operate as a licensed exchange, or alternatively become a recognized market operator. This guide was revised in 2019.[84] The MAS notes that it will take enforcement action against entities that operate organized markets in financial instruments without a license.

K. Japan

In 2017, the amendment to the Japanese Means of Payment Law came into effect, with the aim of regulating the operations of trading platforms of cryptoassets that do not constitute securities (e.g., Bitcoin and Ethereum). After numerous exchanges filed for a license, serious flaws in several platforms were discovered that required an additional amendment to the law. In May 2019, the Means of Payment Law was amended once again.

At the same time, operations involving cryptoassets that constitute securities remain subject to the Financial Instruments and Exchange Act (FIEA) and not to the regulatory framework that was revised by the Means of Payment Law. For example, platforms that offer trading in securities or derivatives on cryptoassets (including contracts for differences) must obtain a securities exchange license. At present, no platform in Japan has obtained a license to operate a trading system for cryptoassets that are securities.

L. Gibraltar

In 2018, Gibraltar launched the DLT License, a regulatory framework for participants (including custodians and miners) involved in the transfer or storage of value through a DLT network.[85] For example, GBX, a crypto-asset trading platform that is a subsidiary of the Gibraltar stock exchange, operates under a DLT license and is regulated by the Gibraltar Financial Services Commission

[82] www.sfc.hk/web/EN/files/ER/PDF/App%202_%20Conceptual%20framework%20for%20VA%20trading%20platform_eng.pdf   https://thetokenist.io/hong-kong-set-to-shake-up-cryptocurrency-exchange-licensing-process/

[83] www.sfc.hk/web/EN/files/ER/PDF/App%202_%20Conceptual%20framework%20for%20VA%20trading%20platform_eng.pdf

[84] www.mas.gov.sg/regulation/explainers/a-guide-to-digital-token-offerings

[85] www.jbs.cam.ac.uk/fileadmin/user_upload/research/centres/alternative-finance/downloads/2019-04-ccaf-global-cryptoasset-regulatory-landscape-study.pdf

(GFSC). A DLT license is not designed exclusively for trading platforms; it regulates their operations as DLT service providers with entities that provide other services such as settlement and custodian services. According to the new law, DLT licensed entities must meet the basic standards of corporate governance, AML/CTF principles, transparency, risk management including cybersecurity, fair and transparent trading, and other principles.

In 2018, Gibraltar drafted special regulations with the aim of regulating issuance and trading in digital assets (tokens) as means of payment, as well as the trading platforms for these assets.[86] Token regulation was designed to cover the sale, marketing, and distribution of tokens and secondary market operations related to tokens in Gibraltar. The new regulation is designed to address cryptoassets with hybrid consumer-financial features, yet does not apply to operations involving tokens that are classified as securities, which are subject to local securities law and to European MiFID II.

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86   http://www.gfsc.gi/news/hm-government-of-gibraltar-and-the-gibraltar-financial-services-commission-announce-plans-for-token-legislation-272

E.1. Introduction

One of major promises attributed to distributed ledger technology (DLT) is the ability to verify and update information that is simultaneously accessible by multiple parties in a rapid, efficient, and reliable manner. This aspect of the technology is especially attractive when multilateral validation and data reconciliation depend on complex, expensive processes such as post-trade exchange processes and specifically, securities clearing and settlement. In contrast, in the trading phase, DLT's s shortcomings (such as its limited scalability) make it an inferior option compared to existing technologies.

In general, clearing and settlement processes, which create a foundation for exchange trading, are performed to resolve the final settlement of a transaction executed on an exchange, after the orders are matched in the exchange's order book and an obligation is created. Clearing begins when the information of executed trades is forwarded to the clearing system. In this stage, preliminary steps are taken before final settlement of the trades, such as calculating the debits and credits, and netting and forwarding the amounts to the appropriate systems. Clearing concludes with the settlement phase, in which the securities are transferred to the buyer and money is transferred to the seller. The operational and legal outcome of the post-trade phase is the revision of the securities ownership ledger to reflect the change in ownership of the rights in the securities (proof of ownership) resulting from the new transactions that were entered into in the system.

Several theoretical benefits have been attributed to the potential adoption of DLT, including increased efficiency[87] and resilience[88] of the current clearing and settlement processes. Another benefit is the increased potential to introduce automation in the process. Automation is possible because, among other things, special-purpose programming languages can be used to write smart contracts on a DLT network. Using smart contracts in the post-trade process can facilitate collateral management by exchange members or end users, or immediate forwarding of margin calls when a predefined event occurs, without the involvement of a third party. Another important use of smart contracts is in the rapid and safe performance of settlement through atomic swaps, which reduces clearing and settlement times and consequently reduces the various risks attributed to the post-trade phase such as credit risks and counterparty risks.

Assimilating DLT into the clearing and settlement processes may stimulate financial innovation and promote its integration into additional stages in the value chain. Incorporating DLT into the capital market's trading infrastructure adds flexibility in new financial product development, by eliminating the need for participants (intermediaries) to make adjustments to their own databases. This advantage is the result of the combination of distributed information that characterizes this technology and the fact that most of the technology is developed in open source environments.

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[87] HM Treasury, FCA, and Bank of England. Cryptoassets Taskforce: Final Report. October 2018. The report sets out the UK's approach to cryptoassets and distributed ledger technology in financial services – LINK.

[88] Resilience – is an inherent feature of the technology, which derives from the distributed nature of the information and its related permissions, and its reduced dependency on a single point of failure.

Notably, traditional technologies also support the use of software programming. Nonetheless, the opportunity to design a system from the ground up that incorporates the unique features of DLT, specifically for the clearing and settlement phase, offers significant business and technological potential.

The extent to which these benefits are realized in the clearing and settlement phase, and especially their impact on the assimilation of DLT in additional links in the value chain (such as products and trading), depends on the extent of the standardization of DLT-based solution implementation that will emerge in various exchanges and countries.[89]

E.2. Securities clearing – Review of the legal status of clearing systems

1. General

In the traditional securities world, clearing, settlement, and custodian services are typically rendered by clearing houses that operate through financial intermediaries – the clearing house members who participate in the clearing process. The following types of services are rendered in the clearing phase:

(1) Central securities depository (CSD) services:

    a. CSDs are the first entry point of securities that are listed for trade on the secondary market. After securities are issued, they are deposited and recorded in the CSDs, in the securities accounts in the name of the various clearing members who hold them for their customers, for other brokers, or for themselves. The CSD is responsible for verifying that the number of securities initially deposited in it is identical to the number of securities listed for trade on the secondary market and distributed between its members, and is also responsible for managing the inventory balances on a daily basis according to the trades executed. The balances must match with the inventory balances in the members' ledgers.

    b. CSDs provide ongoing management

services of rights in securities, including payment related to corporate events such as dividend distributions and interest payments, mergers, and allocation of rights. Note that custodian services are rendered by CSDs through registration companies and the clearing members.

The CSDs render the custodian services at the top of the custody chain. This means that they manage the balances and movements in the securities accounts of the various clearing members who, in turn, render additional services to the customers and brokers on behalf of whom they hold the securities in the CSDs.

(2) Clearing services - These steps precede the final settlement of the transactions, such as calculation of the movements, and netting and forwarding of net amounts to the appropriate systems before the actual settlement of a transaction in the participants' accounts.

(3) Settlement services – Crediting securities in the account of the buyer clearing member, and debiting the securities in the account of the seller clearing member. Typically, balances of securities inventories are settled concurrently with the settlement of the monetary consideration by debiting and crediting the monetary accounts through payment systems (which is a mirror image of the settlement of securities). Clearing members render supplemental services by crediting or debiting their customers' accounts in their own ledgers.

(4) Central counterparty (CCP) services – Several clearing houses render CCP services by interposing themselves between the brokers who are parties to the transaction, and guaranteeing the transaction for both parties. The purpose of this service is to assure the parties that the securities transaction is executed, for example by rendering a CCP Guarantee, as parties to an exchange trade are typically unaware of the identity of their counterparty in the trade.

2. Clearing houses – according to the Securities Law

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[89] The current trend is for multiple DLT solution developers to work together to ensure the interoperability of their systems. For example, Consensys, a leading Ethereum developer, joined Hyperledger, an open-source effort led by IBM. LINK.

On April 5, 2017, the Knesset passed Amendment 63 to the Securities Law concerning a change in the structure of the stock exchange ("Amendment 63").[90] Among other things, Amendment 63 imposed a licensing requirement on the operations of clearing systems.[91] The required clearing house license is to be issued by the Minister of Finance after consultation with the ISA. The Amendment also incorporated into the law a substantive definition of a "clearing system," which stipulates the activities that are subject to the said licensing requirement.

Notably, the law grants protection to licensed clearing houses, such as arrangements regarding the principle of settlement finality, designed to reduce potential adverse effects to the clearing process as the result of a default by a clearing member.

The law distinguishes between the system that performs the clearing activity, which is known as the "clearing system" and the company that holds a license to operate the clearing system, which is known as the "clearing house." A clearing system is defined as any one of the following:

"(i) A central system by means of which transactions in securities are settled;

(iii) A system providing central depository services (Central Securities Depository) for securities for which a transaction has been executed for the first time;

(iii) A system that acts as a Central Counterparty in transactions in securities; for this purpose, "Central Counterparty" in a transaction in securities - an entity ensuring the parties to a transaction in securities that it will be completed, among other things by way of a guarantee."

Settlement of a transaction in securities is defined as the transfer of a security or transfer of the payment for it, according to a transaction in securities.

Each of the components of the definition refers to a distinct function performed by the clearing system. The first reflects the clearing system's role in settling a securities transaction, which is distinct from executing the transaction. This role implies that the clearing system is a type of payment system through which securities and the consideration for them are transferred between clearing house members' accounts. The second function represents the conventional operating method in clearing systems, which manage central custody services and accounts at the top of the custody chain, as described above. The third function refers to an additional role played by some clearing houses that act as CCPs: They manage clearing house members' counterparty risks by managing collateral. **The element of centrality appears in all components of the definition, and is a primary feature that characterizes clearing systems' activities.**

In view of the broad definition of a clearing system, Section 50A(a8) grants authority to the Chair of the ISA, with the consent of the Minister of Finance, to grant exemptions to entities that are subject to a licensing requirement. This section determines, **"If the Authority chairman has considered that it will not damage the interests of the public of investors, he may, with the consent of the Minister of Finance, exempt a certain company requesting a Clearing House license from all or some of the provision under this section and set conditions for the grant of the said exemption."**

The law, in various contexts, presumes the existence of clearing house members, which are entities approved by the clearing house as members.[92]

According to the Securities Law, the Minister of Finance, with the approval of the Knesset Finance Committee, may enact regulations determining the conditions for a clearing house license, including requirements related to equity, insurance, deposits, and guarantees, and may determine different provisions for different types of clearing systems. The Minister of Finance is authorized to take a broad range of considerations into account when considering a license application, including the applicant's action plans and prospects of realization, the skills of the applicant's officers and

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[90] Securities Law (Amendment No. 63) 5777-2017.

[91] Section 50A(a2) of the Securities Law.

[92] Excluding the Bank of Israel.

their suitability for their positions, the financial means of the applicant and its controlling owners, the reliability of the applicant and its controlling owners and officers, and considerations of public interest. The ISA is authorized to issue directives concerning the details of the license application and the submission process. Clearing houses are subject to, among other things, provisions that apply to an exchange in respect of which the Minister of Finance has the authority to determine conditions and restrictions on a license, to revoke or suspend a license, control and holding means of control, and permitted activities.[93] The Law also imposes on clearing houses obligations to determine rules to protect its stability and operational continuity, the existence of means of risk management, and emergency back-up arrangements.[94] The Law also defined rules of corporate governance that apply to clearing houses[95] and the ISA has the authority to oversee and issue directives pertaining to clearing houses.

At present, no regulations have been defined regarding clearing house license fees or conditions such as equity, insurance, deposit and guarantee requirements. The Tel Aviv Stock Exchange Clearing House Ltd and the Maof Clearing House Ltd operate under the transitional provisions included in Amendment 63, according to which these clearing houses are deemed to have been issued a license. The main regulatory arrangements that apply to these clearing houses are set out in the ISA Chair's directive on rules to ensure their proper functioning ("the Clearing House Directive"), which also includes equity and insurance requirements, and rules pertaining to their mode of operation, such as risk management, compliance, conflicts of interest, finality of settlement, and other issues.

The regulation of clearing house operations in the Securities Law is largely a regulatory outline. This feature of the regulation creates relative flexibility, allowing future regulation to be adjusted to the specific features of new clearing houses, including DLT-based clearing houses. There are multiple ways to design a clearing system for digital securities but as only few DLT-based clearing houses are currently in operation, it is not possible at this stage to map all the regulatory issues that different configurations of clearing systems may entail.

E.3. The Delivery versus Payment (DvP) Mechanism

1. General

DvP is a settlement mechanism that ties two obligations – the transfer of securities, on the one hand, and the transfer of the funds for those securities, on the other – by making the transfer of one obligation conditional upon the concurrent transfer of the second obligation. The transfer is performed only when both parties have assets that are available for transfer.

DvP resolves Principle 12 of the CPSS-IOSCO Principles for Financial Market Infrastructures (PFMI).[96] According to this principle, if a financial entity clears two linked transactions (e.g., a securities transaction or a currency transaction), the settlement of one obligation must be conditional on the settlement of the other. Within this principle, a central entity that maintains an exchange-of-values settlement system is required to eliminate principal risk by stipulating that the final settlement of one obligation is made only after the final settlement of the linked obligation, irrespective of whether clearing is on a gross, transaction-by-transaction basis, or whether clearing is netted. The purpose of this principle is to reduce systemic risks by reducing the probability that entities will be "infected" by other entities' stress events.

In view of this principle, in most securities clearing houses, securities are transferred almost

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[93] Sections 50A(a2)-(a7) of the Securities Law.

[94] Section 50B(a).

[95] Section 50B(19) of the Securities Law.

[96] Principle no. 12. Recognition of the risks entailed in clearing and settlement motivated BIS and IOSCO to determined, in the report by the Committee on Payment and Settlement Systems (CPSS), a document of international principles that will apply to financial market infrastructures including central clearing systems of securities and derivatives that act as counterparties (CCP), and on central securities depositories (CSD). These core principles constitute a basic framework used in the worldwide development of clearing house regulation.

simultaneously with the transfer of the funds.[97] Complementary legal arrangements were also defined to ensure the legal linkage between the settlement of the two transactions.

In most clearing houses in the world, securities settlement takes place within two business days after the date of the transaction on the exchange (T+2). In the TASE Clearing House, settlement typically takes place one day after transaction execution (T+1). This discrepancy is designed to allow time to perform all the appropriate preparations for the settlement process.

As a result of the fact that settlement is not processed in real time, clearing members and their customers are not required to hold the total amount of securities or funds for payment on the transaction date. When settlement is processed, the clearing member must have recorded to his credit the net amount of securities required or the funds required for payment in the central bank.

Settlement is usually netted, that is, in the clearing process the clearing house calculates the net total of securities and the net total of funds for each clearing participant at the end of trading or toward the end of the clearing window in the central bank.

2. Implications of DLT use on reduced settlement times and on the DvP mechanism

DLT may significantly reduce clearing and settlement times, and may even facilitate real-time or close-to-real-time processing, with no significant time difference between a transaction's execution and the date of its final settlement. DLT supports the use of smart contracts to define that the transfer of one asset is "pending" until the funds for that asset are available for transfer. It is also possible to stipulate the transfer of one asset by the transfer of the other. A record of the assets in a ledger will facilitate immediate transfer while the absence of assets (on the stipulated date) will cancel the transaction. Thus, DLT may enhance

the efficiency of the DvP mechanism and support its automation.

Immediate settlement also represents added value in the form of a reduction to the credit risks, counterparty risks, market risks, and liquidity risks that emerge when transaction and settlement are not processed simultaneously.[98] For this reason, regulators around the world have invested efforts to reduce settlement times and shorten settlement cycles from T+3 to T+1.[99]

DLT's ability to support the DvP mechanism and shorten settlement cycles has triggered regulators' significant interest in DLT applications that could be used for this purpose.[100] As stated earlier, in UBIN, a joint project of the Monetary Authority of Singapore (MAS) and the Singapore stock exchange (SGX), tests were conducted in November 2018 to assess the implementation of a DLT-based DvP mechanism.[101] At the conclusion of the project, a joint report issued by Deloitte, SGX, and MAS contained an overview of the process. According to project leaders, prototypes developed for DvP demonstrated the capability of simultaneous, final settlement of digital assets (tokens) on platforms based on distinct DLT networks. According to the project leaders, this capability improves operational efficiency and reduces settlement risk.

Another prominent project is STELLA, led by the central bank of Europe Central Bank (ECB) and Bank of Japan. The project focused on a POC study of a DLT-based DvP application. The project focused only on the technical aspects of the application and investigated its capability for representing the currency leg and the asset leg on different ledgers (that use different DLTs), rather than representation on a single ledger.

Reduced settlement cycles, including all the related risk-mitigating benefits, should also lead to a reduction in the collateral that clearing members and end participants are required to make available

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[97] Nonetheless, DvP does not require simultaneous clearing, and some transfer mechanisms are not simultaneous. See for example, Recommendations for Securities Settlement Systems, p. 14 (BIS, ISOCO, 2001). LINK.

[98] For additional information, see SEC, Amendment to Securities Transaction Settlement Cycle, 2017, a legislative proposal to reduce the settlement cycle from T+3 to T+2. LINK.

[99] See Delivery versus Payment on Distributed Ledger Technology, a report developed with the contributions of MAS, SGX, Anquan Capital, Deloitte and Nasdaq, p. 9. LINK.

[100] Including central banks in their capacity as regulators of the payment systems.

[101] LINK

for trading, and consequently reduce settlement costs. However, making the exchange transaction conditional upon the existence of available assets and funds may adversely affect end customers who typically use credit until the settlement date.[102] Therefore, any steps to reduce settlement cycles should be taken as part of a dialogue with the market and after an assessment of the efficiency of the credit market, including the securities lending market.

The assumption is, that to realize the full potential benefits of implementing DLT in DvP mechanisms, the payment side must be recorded on the DLT network and settled using the same technology, rather than use traditional central bank payment systems for final settlement of monetary obligations. As a result, the settlement process is not required to communicate with systems that are external to the DLT network in question.

In summary, the potential of implementing DLT to perform safe, rapid exchanges of securities into funds (DvP) and consequently to reduce the risks posed by securities settlement constitutes a significant benefit. Nonetheless, the technology is new and is not implemented in major securities clearing houses worldwide, despite the reported promising POC tests performed by various entities. Furthermore, two remaining issues concern the willingness of various capital markets to transition to real-time settlement and the option of representing currency obligations on a DLT network, alongside representation of securities.

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[102] Phoebus L. Athanassiou, Digital Innovation in Financial Services: Legal Challenges and Regulatory Policy Issues. Kluwer Law International BV, 2016. LINK.

Review of Trading Platform Regulation

F.1. General

In Israel, a single regulatory framework currently applies to all multilateral trading platforms - the regulation of stock exchanges. For the sake of comparison, the regulation in the US and the EU cover two types of multilateral trading systems, which differ primarily by branding and by the extent of supervision to which they are subject. One type of multilateral trading systems includes large exchanges that operate at a large volume and are fully supervised by the authorities and subject to stringent regulation. The second type of multilateral trading systems includes alternative trading platforms that are smaller entities with typically more limited trading volume. Different regulatory rules and a different extent of oversight, transparency, and regulatory requirements apply to these systems.

This section briefly reviews the types of secondary markets established in the US and the EU that function as alternatives to traditional exchanges, followed by a brief review of the principles of regulatory legislation on exchanges in Israel.

F.2. Regulation in the US

In the US, extensive regulation applies to national exchanges according to the US Securities Exchange Act 1934 ("the US Exchange Act"). According to the US Exchange Act, national exchanges in the US (such as the NYSE and the NASDAQ) are subject to stringent requirements and oversight by the Securities and Exchange Commission (SEC). Exchanges also have self-regulatory obligations: They must have the ability to enforce compliance of federal securities laws and exchange rules on their members and associated persons. An exchange may enter into an agreement with a self-regulatory organization (SRO) to oversee its self-regulatory requirements on a daily basis, while the exchange maintains its overall responsibility as an SRO. Furthermore, exchanges are subject to stringent rules of reporting to the regulator and to rules of corporate governance.

Smaller multilateral trading systems managed by smaller entities were established alongside the national exchanges. In 1996, Congress granted the SEC additional flexibility in regulating trading systems and authorized it to exempt any individual from the provisions of the US Exchange Act and to define appropriate conditions for the operations of these systems. In 1998, the SEC adopted regulation related to alternative trading systems (ATS) in order to address the large number of trading systems operated by registered broker-dealers that offered similar services to the services rendered by the national exchanges.

An ATS is defined as any organization, association, person, group of persons, or system:

(1) that constitutes, maintains, or provides a market place or facilities for bringing together purchasers and sellers of securities or for otherwise performing with respect to securities the functions commonly performed by a stock exchange within the meaning of § 240.3b-16 of this chapter; and[103]

(2) that does not:

(i) set rules governing the conduct of subscribers other than the conduct of such subscribers' trading on such organization, association, person, group of persons, or system; or

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[103] CFR § 242.300 (a)17

(ii) discipline subscribers[104] other than by exclusion from trading.

In effect, an ATS is a trading system that meets the definition of an exchange under the US Exchange Act but is exempt from the licensing requirement and from the regulation that applies to national exchanges, if it operates under a license of a broker-dealer operating an ATS under the exemption set out in Exchange Act Rule 3a1-1. Entities that meet the definition of an exchange under federal securities law may also request a full exemption from the requirement to register as a national exchange due to limited trading volumes. In such a case, exempted entities are also exempt from the regulation that applies to ATSs[105].

In general, the regulatory requirements that apply to ATSs are "thinner" than the regulatory requirements that apply to national exchanges.

In its publication of ATS regulation, the SEC listed the possible reasons for an ATS to elect to register as a national exchange rather than to comply with ATS regulation. These reasons included the prestige associated with national exchange status and a national exchange's ability to determine its own rules related to conduct, trading, access, and fee structure.

The SEC noted that an ATS that elects to register as a national exchange must, among other things, comply with rules related to the following issues: (1) fair representation of members and the public in the exchange governance; (2) limitations on membership – exchange members must be registered broker-dealers; (3) self-regulatory obligations – an exchange must have the ability to enforce compliance with federal securities laws and the exchange's rules on its members and their associated persons, although an exchange may enter into an agreement with an SRO to provide daily oversight of its self-regulatory obligations while maintaining its ultimate responsibility as an SRO; (4) prohibitions on trading in unregistered securities (In contrast to an ATS registered as a broker-dealer, an exchange may trade only in securities that are registered with the SEC and approved for listing on an exchange), and; (5) participation in NMS. An ATS that elects to register as a national exchange is required to become a member in the market-wide transaction and quotation reporting plan operated by registered exchanges and FINRA[106];

F.3. Regulation in Europe

In Europe, two main types of regulation apply to multilateral trading platforms. The first type refers to regulated markets (RM), which is the term in the MiFID 2 Directive that corresponds to a national exchange in US regulation. The second type refers to multilateral trading facilities (MTF), which corresponds to an ATS in US regulation. Both types of platforms, RMs and MTFs, are defined as multilateral systems that bring together multiple third-party buying and selling interests in financial instruments - in the system and in accordance with non-discretionary rules - in a way that results in a contract. As these definitions indicate, the distinction between an RM and an MTF lies in the obligations imposed on each platform type, which are defined in different sections of the relevant European directive. An RM may be managed by a Market Operator, while an MTF may be operated either by a Market Operator or by an investment company (the European regulation's term that corresponds to a registered broker-dealer in US regulation)[107].

Similarly to ATSs in the US, MTFs were established in Europe in 2004 to address the emergence of trading platforms that compete with traditional exchanges. MTFs do not functionally differ from RMs, but only differ in being subject to more lenient requirements and less stringent regulation.

The following is a non-exhaustive list of the main differences in the requirements that apply to RMs and to MTFs:

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[104] A subscriber is any person who has entered into a contractual agreement with an alternative trading system to access said alternative trading system for the purpose of effecting transactions in securities or submitting, disseminating, or displaying orders on the alternative trading system, including a customer, member, user, or participant in an alternative trading system. A subscriber, however, shall not include a national securities exchange or national securities association.

[105] See Securities and Exchange Commission Release No. 34-40760 (8.12.98), p. 52.

[106] See Clifford E. Kirsch, Broker-Dealer Regulation (2nd ed.). NY, Practising Law Institute, 30-32.

[107] Directive 2014/65/EU ("MiFID 2").

(1) Publication of a prospectus: According to the EU prospectus regulation[108], in contrast to listing of securities for trading on an RM, admitting securities for trading on an MTF or publishing buy and sell prices during trading on an MTF are not considered in themselves to be an offer to the public and therefore are not required to publish a prospectus[109]. Instead of a prospectus requirement, MTF operators are subject to a general obligation to be satisfied that there is access to sufficient publicly available information in relation to securities that they accept for trading[110]. In practice, several MTFs require the publication of an "inclusion document" of a significantly more limited scope than a prospectus.

(2) Periodic and immediate reports: Until recent years, the European directive on market abuse applied to RM operations but not to MTF operations. The 2014 Market Abuse Regulation[111] applied post-admission disclosure requirements, among other requirements, to securities only traded on MTFs and to securities traded on RMs. These disclosure requirements include the immediate disclosure of obligations related to material information, and publication of a list of insiders. On this matter it should be noted that under certain conditions it is possible to compel registration of securities for trading without the issuer's consent, and in this case, the issuer is not subject to post-admission

disclosure obligations.

(3) Listing instruments for trading: The rules of listing on an RM are more stringent than MTF admission to trading rules. That fact creates a differentiation between the two exchange types. As a result, RMs are designed mainly for trading in securities of established firms while MTFs are designed for trading in securities of small and medium-sized ventures[112].

(4) By-laws: RMs are subject to additional arrangements related to the formulation of rules on various topics regarding the subscribers or participants[113]. These arrangements do not apply to MTFs[114].

(5) Promoting a market for small and medium-sized enterprises: Another difference between RMs and MTFs is that, according to Section 33 of MiFID 2, only an MTF may register as a market for SMEs[115].

F.4 Regulation in Israel

As mentioned, in Israel, a single regulatory framework applies to all multilateral trading platforms - the regulation of stock exchanges. In Section 44EE of the Securities Law, an exchange is defined as "a company that has obtained a license to set up and manage a securities trading system pursuant to Section 45." According to

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[108] See Regulation (EU) 2017/1129, which came into effect in 2019 and replaced Directive 2003/71/EC.

[109] See Recital 15 of Regulation (EU) 2017/1129.

[110] MiFID II, Section 18(2).

[111] Regulation (EU) No 596/2014. Paragraph 8 of the explanatory note to the new regulation on market abuse indicates that the previous directive on this issue focused on financial instruments listed for trade on an exchange (a regulated market) and instruments in respect of which an application for registration on a regulated market was filed. The new regulation also applies to financial instruments that are registered or in respect of which an application for registration on multilateral trading facility (MTF and OTF) was filed.

[112] See Section 18(2) in comparison to Section 51, MiFID II.

[113] Paragraph 53, which applies to exchanges.

[114] Establishment and management of the exchange, directives concerning transactions on the market, the professional standards that will apply to the investment firms and banks operating in the market, the qualifying conditions of members or participants that are not banks or investment firms, rules related to transaction clearing.

[115] The definition of SME in MiFID II is: "'small and medium-sized enterprises' for the purposes of this Directive, means companies that had an average market capitalisation of less than EUR 200 000 000 on the basis of end-year quotes for the previous three calendar years." Paragraphs 132-135 of the MiFID II Recital explain the background to SME regulation. The regulation is designed "to facilitate access to capital for smaller and medium-sized enterprises (SMEs) and to facilitate the further development of specialist markets that aim to cater for the needs of smaller and medium-sized issuers. Those markets which are usually operated under this Directive as MTFs are commonly known as SME growth markets, growth markets or junior markets. The creation within the MTF category of a new sub-category of SME growth market and the registration of those markets should raise their visibility and profile and aid the development of common regulatory standards in the Union for those markets. Attention should be focused on how future regulation should further foster and promote the use of that market so as to make it attractive for investors, and provide a lessening of administrative burdens and further incentives for SMEs to access capital markets through SME growth markets. The requirements applying to that new category of markets ... also need to strike the correct balance between maintaining high levels of investor protection ... while reducing unnecessary administrative burdens ... It is proposed that more details about SME growth market requirements such as those relating to criteria for admission to trading on such a market would be further prescribed in delegated acts or technical standards." It is clarified that "an issuer that is an SME should not be obliged to apply to have its financial instruments admitted to trading on an SME growth market. In order for that new category of markets to benefit SMEs, at least 50% of the issuers whose financial instruments are traded on a SME growth market should be SMEs. That assessment should be made on an annual basis. The 50 % criterion should be implemented in a flexible manner, based on the market capitalisation of the previous three calendar years."

Section 45, an entity that opens or manages a securities trading system, as defined below, is required to hold an exchange license. A securities trading system is defined as "a multilateral system with which trading is managed in securities by matching buy orders and sell orders of securities and settling transactions between buyers and sellers of securities, acting without employing discretion according to predetermined rules." A multilateral system is a system within which trading in securities is conducted by bringing together buy orders and sell orders of securities and facilitating transactions between buyers and sellers of securities, acting without discretion, according to predetermined rules.

It should be noted that the transaction execution element in this definition does not refer to execution in terms of clearing and settlement, which are essentially post-trade services (executed by clearing houses), but rather to the fact that an exchange typically provides the foundation for transactions between securities buyers and sellers. Furthermore, the transaction facilitation element in this definition does not refer to the realization of the transaction in terms of clearing and settlement, which is by nature a post-trade service, but to the fact that stock exchanges are characterized by having established an infrastructure for transactions between sellers and buyers of securities. This is different from the clearing and settlement processes, which are part of the transaction execution and are generally performed by clearing houses and not by stock exchanges.

According to Section 45(A) of the Law, the Minister of Finance, after consulting with the ISA, may grant a license to an exchange, subject to compliance with all of the following threshold conditions:

(1) Restriction on operations - In general, the exchange and any corporation held by it may engage only in the management of a securities trading system or "ancillary services."[116]

(2) By-laws - The by-laws of the exchange must include rules of proper and fair management of the exchange[117]. The by-laws are subject to approval of the ISA and the Minister of Finance.

(3) Expertise - The exchange must have the "technical expertise and appropriate means to operate a securities trading system that will ensure the stability of the system, its reliability, availability, and information security."

(4) Fees to be paid pursuant to the regulation An exchange must pay annual fees pursuant to the regulations.

(5) Additional requirements - The exchange must meet requirements concerning equity, insurance, deposit and guarantees, which will be determined in regulations.

In addition to the conditions noted in Section 45A of the Securities Law, Section 45B contains a non-exhaustive list of considerations that may be taken into account in granting a stock exchange license[118].

According to Section 45G of the Securities Law, control of the exchange is subject to a permit granted by the ISA. Furthermore, no person may hold five percent or more of a certain type of means of control in an exchange, other than under a permit granted by the ISA. According to Section 45G(g), a permit under this section will not be granted to an exchange member or to a banking corporation (even if it is not an exchange member).

According to Section 45O, an exchange must

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[116] Clearing, settlement, custodian and other services related to the exchange's operations in managing securities trading system (subject to restrictions by law). Also see Section 45M of the Law.

[117] Clearing, settlement, custodian and other services related to the exchange's operations in managing securities trading system (subject to restrictions by law). Also see Section 45M of the Law.

[118] Including: the applicant's action plans and their prospects, the expertise of its officers and their suitability for their positions, the financial means of the applicant and its controlling owners, and the business background of the controlling owner, and considerations related to the credibility of the applicants, the controlling owner, and senior officers of the applicant and of the controlling owner.

determine procedures on a series of matters[119] to regulate its operations and take steps and allocate resources to ensure their implementation. These procedures are designed to function as an additional regulatory mechanism for the exchange[120]. Several of the matters listed in this section define an exchange's obligation to determine procedures to comply with requirements defined in other sections of the law, while others define substantive obligations that are not defined in other sections. For example, this section requires an exchange to determine procedures regarding its agreement with a clearing house that maintains proper arrangements to clear transactions and regarding its control of the clearing house's operations.

The ISA is granted the authority to expand the list of issues on which procedures must be defined. According to Section 45O(b) of the Law, an exchange's failure to comply with its obligation to define procedures, to take steps to ensure their implementation, or to allocate resources for the same, constitutes grounds for revoking or suspending its license pursuant to Section 45E(a)(5).

Another key regulatory mechanism defined in Section 46A of the Law is the obligation of an exchange to define rules in its by-laws for its orderly and fair operation. Since the by-laws are approved by the ISA and are subject to a veto by the Minister of Finance, and in view of the ISA's authority to order a modification to an exchange's by-laws, this is a key mechanism for regulating an exchange's operations. The issues that must be regulated in the by-laws include rules regarding membership in the exchange, rules for listing securities for trade, rules regarding trade including the conditions and procedure for temporary suspension of or restrictions on trading, allowing access to trading for exchange members only, publication of trading results, and rules regarding the obligations of firms whose securities are listed for trading.

According to Section 50 of the Law, an exchange in Israel must operate continuously and may not suspend the operation of the trading system unless it believes, or if the Minister of Finance believes, that a suspension is in the interests of the investor public, and in any case the exchange will not determine a suspension of more than one business day without the approval of the Minister of Finance.

Corporate governance - Chapter Eight Article "D" Sub-article B (Sections 50B(3)-50B(18) of the Law includes detailed provisions related to corporate governance that apply to exchanges. Following is a non-exhaustive list of the main provisions:

(1) The majority of members of the board must be independent directors[121]. Of these, at least three must be independent directors appointed by the general meeting, at the advice of the selection committee. The selection committee comprises a judge appointed by the Minister of Justice, who serves as the committee chair, the chair of the board of the exchange, and a senior member of an academic faculty appointed by the ISA chair.

(2) The board must appoint the members of the audit committee[122] and the remuneration

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[119] Procedures to ensure compliance with the licensing conditions under Section 45A, the conditions determined in the license according to Section 45D, and with its obligations according to this law; procedures concerning the technical means required for the operation of the exchange, including computer systems or other technological systems; procedures concerning supervision of exchange members' compliance with rules defined in the exchange by-laws, as defined in Section 46; procedures concerning supervision of exchange members' and employees' compliance with the procedures defined by the exchange according to this section; procedures concerning supervision of the operations of exchange members and employees to ensure the proper operations of trading on the exchange; procedures to ensure the proper and fair operation of the exchange according to the rules defined on this matter in the exchange by-laws, including procedures to identify and handle conflicts of interest in its operations and procedures to identify risks to which the exchange is subject and to manage such risks; procedures concerning an agreement with a clearing house that maintains appropriate arrangements for clearing securities transactions and concerning controls over the clearing operations performed by the clearing house for the exchange; procedures on other matters to be determined by the ISA.

[120] See the explanatory note published in connection with Securities Law (Amendment No. 63), 5777-2017, concerning a structural change in the exchange.

[121] An independent director is a director who is meets the conditions of qualification for appointment as an external director defined in Sections 240(b) - (f) of the Companies Law 5759-1999 ("the Companies Law") regarding a public company, and also meets additional conditions of qualification defined in Section 50B5 of the Securities Law, which concern, among other things, the independent director's lack of connection or linkage to exchange members, companies listed on the exchange, and anyone who provides paid services on a regular basis to the exchange, a controlling owner of the exchange, or an exchange member.

[122] The audit committee will perform the functions of an audit committee according to Section 117 of the Companies Law, and in addition, functions related to conflicts of interest.

committee[123] from among its members.

(3) An exchange is subject to the provisions in the matter of appointing an internal auditor and transactions with parties of interest that, according to the Companies Law, apply to public companies and private companies that issued bonds to the public.

Oversight by the ISA – According to Section 51 of the Law, the ISA is authorized to supervise the orderly and fair management of the exchange, and if it believes that the exchange acted in contrary to the procedures that it determined or in contrary to the provisions of its by-laws or its guidelines, or in a manner that constitutes a violation of its orderly and fair management, the ISA may instruct the exchange on the appropriate course of action. The exchange is required to deliver to the ISA reports on the affairs of the exchange on such dates and in such detail and manner as the ISA determines, at the ISA's demand. Financial statements will be sent to the ISA no later than three months after the end of the financial year, and the ISA may determine directives concerning the publication to the public of the financial statements under this subsection. According to Section 51(D) of the Law, an ISA representative may attend the general meetings and board meetings of the exchange and its committees, if the chair of the ISA believes that the exchange is acting in a manner that is damaging to the interests of the investor public.

Section 49A of the Law allows the ISA chair to permit any person to make an offer to provide securities trading services on a securities trading system that does not have an exchange license, on the condition that such trading system is managed by an exchange outside Israel.

In summary, several of the rules in the Securities Law related to exchanges envisioned a significant national exchange that operates through exchange members, and therefore several of the regulatory requirements applicable to an exchange may hamper the establishment of smaller trading platforms. Not all obstacles are of equal weight. In the absence of a section that authorizes an authority to exempt an entity wishing to establish an exchange from the exchange licensing requirement or to exempt such applicants from any of the aforesaid obligations imposed on exchanges, these obstacles become much more significant.

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[123] The remuneration committee will perform the functions listed in Section 118B of the Companies Law.

G.1. General

The significance of imposing an AML/CTF regime on virtual assets is no longer debatable, in view of emerging AML/CTF threats targeting the features of virtual asset transactions (rapid global operations, non-face-to-face service, anonymity of the parties to a transaction and the source of the funds, etc.), and also in view of the desire to allow this innovative technology to realize its full potential while reducing the risks it poses. This is all the more the case when we consider the operations of platforms designed specifically for digital securities trading that are subject to regulatory rules and the supervision of competent authorities, including supervision in the field of AML/CTF.

In the Prohibition on Money Laundering Law,[124] the definition of "property" also includes activities involving virtual assets that are securities.[125] Consequently, the obligations that apply to financial entities by law, including client due-diligence (CDD), retention of documents and records, control over account activities, and reporting unusual activity to the Israel Money Laundering and Terror Financing Prohibition Authority (IMPA), also apply to operations involving virtual assets.

The Prohibition on Money Laundering Law includes an explicit list of the entities that are subject to the AML/CTF regime. Consequently, if an entity listed in the law performs operations involving virtual assets that are securities, it is categorically subject to the requirements of the AML/CTF regime. In contrast, when new actors that are not subject to the provisions of the law begin to engage in such operations, a question arises whether the law applies to such operations. For example, the law does not impose an AML/CTF regime on exchanges or clearing houses, but only on the stock exchange members (for this matter, banking corporations that are stock exchange members are supervised by the Bank of Israel, and non-bank stock exchange members are supervised by the ISA).

This issue may be especially relevant in the case of digital securities trading, in view of the technology's ability to reduce the number of financial intermediaries and change the functional balance between the stock exchange and its members. Therefore, the question of whether to extend the application of the Prohibition on Money Laundering Law to other trading platform models, including the application of the law to platforms themselves, in the appropriate cases, warrants further study.

An AML/CTF regime that includes CDD and retention of identification documents and transaction records is not inherently compatible with the world of virtual assets, and poses both regulatory and technological challenges. For example, AML/CTF obligations call for recording the identifying details of the service recipient, the transferee, and the details of the transaction. What may result is a DLT-based market for ownership with a parallel traditional database used for AML/CTF legislation compliance. Several questions

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[124] Prohibition on Money Laundering Law 5760-2000.

[125] In Section 1 of the Prohibition on Money Laundering Law 5760-2000 ("Money Laundering Law"), property is defined as: "land, chattels, monies, and rights, including property that is the proceeds of the aforementioned property, and any proceeds or property attributable to or acquired from the sale or profits generated by such property."

also arise regarding non-face-to-face CDD and methods to monitor virtual asset operations. Notably, the DLT industry is developing new technological means in an effort to resolve the issues related to CDD and implement additional AML/CTF requirements.

G.2. FATF Recommendations

The Financial Action Task Force (FATF) is an international task force whose role is to develop and promote policy to prevent money laundering and terrorist financing. Since 2014, the FATF has published several documents on the risks related to virtual currencies and implementation of a risk-based approach to such operations.[126]

In 2018 and 2019, the FATF updated its recommendations and clarified that they also apply to virtual assets and virtual asset service providers. The organization also published guidance on a risk-based approach to virtual assets and their service providers.[127] The guidance provides details of how countries, regulators, virtual asset service providers, and other financial entities are required to implement FATF recommendations with respect to operations involving virtual assets and the activities of virtual asset service providers. The FATF emphasized that, in addition to the recommendations and guidance, it also plans to perform an in-depth examination of the implementation of its recommendations by various countries and entities in June 2020.

Virtual assets that are securities are not included in the FATF's definition of a virtual asset. The organization's definition does not include units of digital value that represent securities. Nonetheless, it is not contested that operations involving virtual assets that are securities, such as trading, come under the ambit of the FATF's recommendations because its definition of "funds" includes assets of all types, including electronic or digital assets that are evidence of ownership or an interest in such assets.[128]

G.3. Implementing an AML regime – Designing the network

A trading platform for virtual assets cannot be permissionless with respect to the trading entities because it must include a method to confirm that access to the trading platform and on-boarding complies with CDD requirements, whether these obligations are performed by financial intermediaries (which is the case today, pursuant to the Prohibition on Money Laundering Law) or by the platform operator (where the platform is directly accessible).

In summary, the need to comply with AML obligations is critical. Therefore, any digital market venture must design its services for compliance with these obligations. At the same time, regulators must verify that legislation in this field is also applicable to new market players, or existing entities to which the law does not currently apply, if they change the nature of their operations.

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[126] In 2014, the FATF published a document on the key definitions and risks stemming from operations involving virtual currencies. See Virtual Currencies: Key Definitions and Potential AML/CFT Risks. In 2015, FATF published a guidance for implementation of a risk-based approach to operations involving virtual currencies. See Guidance for a Risk-Based Approach to Virtual Currencies.

[127] See Guidance for a Risk-Based Approach to Virtual Assets and Virtual Asset Service Providers.

[128] The term funds refers to assets of every kind, whether corporeal or incorporeal, tangible or intangible, movable or immovable, however acquired, and legal documents or instruments in any form, including electronic or digital, evidencing title to, or interest in, such assets.

This chapter discusses the regulatory implications of disclosure for firms who seek to raise funds from the public on digital markets, an issue that was also discussed extensively in the ICO Committee Report.

This chapter is based on the assumption that the profile of investors and firms operating on a digital exchange is not significantly different from investors and firms operating in a traditional exchange. Therefore, in general, we do not see significant justification for imposing reporting standards on digital exchanges that differ from the rules that currently apply to reporting corporations, with the exception of specific adjustments that are required by the features of the digital technology and the type of securities issued.

Following are several alternatives for disclosure and reporting rules that include restrictions on specific aspects of digital operations (such as the scope of capital raised, market cap, and extent of exposure to a single investor and/or class of investors) that, if adopted, will reduce the regulatory risk and investors' exposure risk. These benefits justify granting leniency and certain reliefs in disclosure and reporting requirements to firms in a digital exchange.

H.1. Recommendations of the ICO Committee on the disclosure structure for firms that issue digital assets, and adoption of a crowdfunding model

The ICO Committee clarified that issuance of digital assets is subject to the Securities Law, according to which any offer and sale of securities to the public is subject to publication of a prospectus and a regime of ongoing reporting obligations, with the aim of providing all the information that may be important for the reasonable investor. At the same time, the ICO Committee also recommended to study the need to adjust the disclosure requirements to the unique features of the operations of firms that issue digital assets, based on the experience and knowledge that the ISA is gaining by addressing cryptoasset issue applications and/or on the basis of the experience of regulators in other states.

The ICO Committee Report also noted that the disclosure requirements regarding cryptoassets should possibly include information for the general public in accessible and comprehensible language, with emphasis on the rights that the assets represent, the entrepreneurs' experience, the aims of the venture and its estimated schedules, costs, and cyber risks and security risks, among other things.

The ICO Committee also recommended to study a funding model for cryptoassets that are securities that is similar to the crowdfunding model.[129]

The ISA continues to monitor the cryptoasset industry, participates in an interministerial team on this issue, and from time to time addresses specific issues related to the application of securities laws on operations involving digital currencies.

H.2. Summary and recommendations

1. As stated at the outset, following the ICO Committee Report and its recommendations, in general we do not see significant justification for

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[129] The crowdfunding model was regulated in an amendment to the Securities Law in 2015 with the aim of allowing SMEs and R&D companies to raise a limited amount of fund from the public through specific web-based funding portals.

reducing the disclosure requirements and liability that should apply to firms that issue cryptoassets that are defined by law as securities, compared to the requirements imposed on traditional reporting corporations.

2. Nonetheless, ICOs are unique in that they involve technology-intense ventures and typically take place in the initial concept phase of venture development. In view of these features, a specific disclosure regime adapted to firms issuing digital securities, in addition to the lateral disclosure and reporting rules, may be necessary. These new rules should focus on the unique technological aspects and security and cyber risks of each specific issued instrument.

The need for specific disclosure requirements should also be assessed according to the extent of responsibility that the issuing and trading platform assumes: Where the creation of a digital security uses the technology of a regulated platform, there is a reduced need for specific disclosures regarding the features of the instrument.

Restrictions on maximum investment per investor – Another potential means of reducing the risks stemming from capital raising on a digital exchange is to restrict the potential maximum loss to investors by capping the investment amount for a single investor. In this manner, investors interested in investing more than the maximum amount will be compelled to divide the amount among several firms; Such diversification will mitigate their total risk in investing in digital securities. Such restrictions and others may also affect considerations to reduce disclosure requirements.

In the crowdfunding model, for example, the maximum investment of a single investor (excluding "lead investors") is NIS 10,000 per investment, provided that the investment amount from a single investor in multiple offers in any consecutive 12-month period does not exceed NIS 20,000 (subject to certain restrictions).

Furthermore, a digital exchange may independently restrict its operations by granting certain relief from disclosure and reporting requirements to firms that seek to issue and trade on it. For example, a digital exchange might wish to adopt one of the operating

models planned for secondary exchanges by limiting the amounts of its issuances or limiting the size of the issuing firms, and as a result, the issuing firms will benefit from relief. On this issue, see the legislative proposal to establish a specific exchange for SMEs, which the Knesset passed in the first reading in November 2018.[130]

It is advised not to restrict the digital exchange to this type of operations in advance, but rather to leave this matter to the entrepreneurs' discretion. For example, a digital exchange may elect to operate as an ordinary exchange, or may elect to operate as an exchange for specific sectors, or under such or other restrictions.

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[130] LINK.

I.1. General

Simply put, blockchain is a technological development of digital systems that record and document information. One of the most important regulatory questions that arises is whether the use of this technology poses new risks relative to existing technologies.

To answer this question, it is best to consider the core technological and business features of blockchain technology as it initially emerged. The technology first appeared as a public, decentralized permissionless system for transferring value.[131] Over time, the decentralized nature of blockchain technology posed numerous legal and regulatory challenges, such as the anonymity of transactions, and the difficulty in determining the law applicable to transactions (and their related information) in view of the transnational nature of its operations, to name a few. Therefore, in absence of clear official regulation on blockchain applications, and in view of the complexity of operating on such networks, the technology is vulnerable to various risks, including money laundering, financial fraud, key theft, and others. In effect, the lack of regulation has become an obstacle to market development. However, as indicated in the empirical study above, many of the ventures in the field of digital securities trading and clearing have developed applications designed to comply with most regulatory principles, by modifying several of the features that impeded the technology's adoption. The use of a new technology with significant implications for the capital market requires insistence on compliance with regulatory requirements related to information technology as well as compliance with the requirements designed to reduce the risks of the technology's use. One way to ensure proper use of the technology and to mitigate its risks is to require compliance with relevant standards, recognizing that the standards themselves are dynamic and evolve in line with developments in the technology.

I.2. Technological risks related to blockchain technology

In view of the technology's immaturity, attention should be directed to the potential risks of blockchain network use, as well as to other known IS and cyber risks. The main motivation underlying attacks against blockchain networks is the theft of the valuable assets these networks contain. The empirical review above indicates that several ventures have been designed to mitigate or eliminate these risks. The main risks to which blockchain networks are subject include:

1. Wallet theft[132] or private key theft – In addition to other risks, users are dependent on a digital wallet service provider (of either private wallets or exchange-held wallets). Holding in a digital asset is based on the asset's transaction history documented in the decentralized database (the blockchain). These transactions in effect say which assets belong to which network address,

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[131] Bitcoin's blockchain network.

[132] A wallet is a software program that supports the management of resources associated with one or more addresses. Generally, wallets supports the performance of tasks such as: (1) query the blockchain to receive a current balance of resources; (2) create a new address (public key) to receive funds or change; (3) receive information, such as new addresses, using a QR; (4) send resources to a specific address (in this case the wallet must hold, or receive the private key/s required to sign off on the transactions; (5) create a back-up for the wallet.

where the address is a derivative of a public key.[133] The entity that holds the private key associated with the address effectively controls the digital assets associated with the address, as a result, wallet theft or private key theft may cause the irreversible loss of digital assets. In documented cases, which occurred mainly on cryptocurrency exchanges, hostile attacks were made on wallets using conventional and well-known methods such as phishing or implantation of malicious malware. Attacks against digital wallets can be made using other sophisticated and less known methods that surfaced in response to blockchain technology.

2. Risks related to smart contracts[134]

Smart contracts allow us to transfer funds, assets, shares, and all other types of value in a transparent, frictionless manner, eliminating the need for the services of intermediaries in a transaction.[135] Smart contracts are, however, sections of codes written by individuals, sometimes using programming languages that lack a significant track record, and as such may be vulnerable to cyber-attacks. Weaknesses in the code and other technological failures (such as bugs in smart contracts) may be exploited. This risk increases where smart contracts rely on information external to the network.

With respect to digital asset trading, blockchains appear to offer a significant revolution in clearing, settlement, and custodian operations, because the technology offers the greatest value to this phase of the trading cycle. Smart contracts can be expected to play an integral role in clearing and settlement, because their use facilitates immediate and simultaneous transfer of securities and funds. Smart contracts link to obligations to transfer

of securities against transfer of payment (DvP), where the transfer is executed only when both parties hold the assets designated for transfer. However, smart contracts themselves pose unique risks (including bugs in the source code and operating environment, and are vulnerable to active attacks based on manipulations of the transaction addresses defined in the smart contract), which add to other well-known risks related to traditional clearing and settlement that potentially impair financial stability.

In summary, automation of DvP smart contracts carries particular risks for the clearing phase.

3. Risks related to attacks against network nodes and blockchain consensus protocols

The consensus principle is designed to create agreement among network participants on the order of the transactions and the authenticity of the transaction data, without reliance on trust among participants. A fundamental starting point of this discussion is that many attacks are theoretical, and their risks have not yet materialized. There are numerous types of attack risks, which are a function of the type the network consensus mechanism. For example, in public (permissionless) networks such as Bitcoin, which are based on a proof of work (POW) algorithm, there is the risk of double-spending attacks, which may occur in a variety of circumstances, including when an attacker who gains control of more than 50% of the network nodes is able to approve blocks that contain false information (also known as a "51% attack" or "majority attack"). Another example is an alternative history attack, which is based on the idea of creating a branch (containing different

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[133] Public key encryption is also known as asymmetric encryption, where the encryption key differs from the decryption key. Each user prepares a pair of keys: a public key, which can be shared with everyone, and a private key, which is not shared (there is a one-to-one correspondence between the public key and the private key). Every public key has only one private key that matches it and vice versa. To encrypt and send a message using this method, the sender must obtain an authentic copy of the recipient's public key. Only the recipient is able to decrypt the message using her private key. The security of this method is based on the difficulty of calculating a private key from the information on the public key.

[134] For example, a critical bug discovered in the smart contract model (a bug in ERC20 token, also known as the Ethereum Request for Comments standard led to the loss of tokens and disproportionate generation of a large amount of tokens. The contracts were written in such a way as to create themselves as an address on the blockchain, but they did not exploit their potential to receive money. As a result, the contract was on an independent address on the blockchain with no instructions on what to do with the tokens .In response to the bug, the Ethereum community decided on a new standard, ERC-223. No serious bugs have been discovered in this standard to date, although the amount of tokens generated is significantly smaller since the ICO crisis occurred in 2017.

[135] Example of a smart contract: Today if we want to order a taxi, we will probably contact GetTaxi, which is an intermediary that guarantees that the taxi driver is credibility, and guarantees to the taxi driver that we won't run off without paying. Similarly, let's say I enter a smart contract called TaxiContract on the blockchain. The two parties involved in the contract are the taxi driver and the consumer (me). The smart contract's code is open, allowing both of us to read all the rules, conditions, and sanctions in the contract. The trigger I inserted into the smart contract is the number of kilometers driven. In other words, the smart contract communicates with the taxi's mileage gauge (for the sake of simplicity, we assume that this feature is already available), and every time the taxi advances one kilometer, three crypto-coins are transferred from my wallet to the driver's wallet. If the trip was 20 kilometers, 60 crypto-coins are transferred to the taxi driver's wallet. In this way, the smart contract bridges the gaps that GetTaxi resolves.

transactions and blocks) on the blockchain starting from the genesis block, and overtaking the main chain. The probability of this type of attack is zero or close to zero: Bitcoin, for example, involves an enormous amount of computing power, and any attack on the network would require enormous resources. From a more fundamental perspective, the notion of trust in the network is based on decentralized consensus.[136] If an attack is made against the network consensus, the network will presumably lose its credibility and as a result, the value it represents. For details on additional types of attacks against nodes, see Appendix B. It is important to note that while most securities exchanges use private blockchain networks or permissioned network that are not subject to the aforementioned risks, yet because these networks have a limited number of permissioned nodes, they are subject to the risk of an attack against the central node with the greatest influence on the network.

4. Privacy risks and the right to be forgotten – The information in a blockchain network is visible to all network participants. Even if the exposed information is incomplete, access to it may lead to the exposure of information on quantities and types of activities. Blockchain networks also pose a risk for an individual's "right to be forgotten," because blockchain data can never be deleted.

5. Decryption risks – A blockchain network is fundamentally based on cryptography and hashes (fingerprints). By decoding a blockchain's SHA-25[137] hash functions, an attacker may also decode a large part of the encrypted databases in the world (that are unrelated to Bitcoin or other blockchain networks). Recent progress in the development of quantum computers whose processing power is expected to be immensely greater than ordinary computers may create vulnerabilities for existing encryption protocols because guessing an encrypted chain would take only minutes using such computers.

I.3. Additional challenges

In its current state, blockchain technology faces the following technological challenges, which are mainly relevant for public networks:

1. Scalability - The number of transactions recorded on a certain block at a given time is limited. Since the world of securities (or digital asset) trading is characterized by an enormous transaction volume, this technical limitation impedes the adoption of this technology for such uses.

2. Information storage - The quantities of information stored on a blockchain and the number of its users grow over time, creating challenges for information storage capabilities and availability.

3. Widespread adoption of blockchain technology requires simplification and increased accessibility. Today the technology is mainly limited to use by technologically oriented individuals.

Note that several solutions to these challenges have been developed.

I.4. Conclusions

Information technology risks (which include information security risks and cyber risks) are business risks that stem from the use or non-use of an information technology. Therefore, information technology risks are part of an organization's operating risks. With respect to blockchain networks, it is important to note that the technology has not yet fully realized its potential and therefore it is difficult to compose a comprehensive list of the risks its use entails. The requirements of trading, clearing, and settlement systems are related to business continuity and reliability but do not directly refer to technology or their risks. Technology naturally changes over time, and therefore should address essential business features rather than the features of a specific technology. This approach reflected in current legislation and in the legal requirements for existing critical computing systems such as MAGNA (the electronic reporting system) addressed in the Securities Law, or exchange systems (addressed in the licensing process).

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[136] This is the internal mechanism of checks and balances in the blockchain protocol, designed to ensure proper operations without disruptions.

[137] The function that encrypts the blockchain network.

Part J

Insights from the Committee's Work and the IRF

Identifying the potential

Based on the Committee's extensive review and meetings, we believe that DLT has the potential to promote the Israeli capital market. Adopting this technology may reduce trading costs to end-clients and systemic risks to the economy, and may create a technological environment that encourages financial innovation and increases access to the capital market for classes of companies (such as SMEs) that refrained from using the public capital market for financing purposes.

In view of the technology's ability to verify and update information that is simultaneously accessible by multiple parties in a rapid, efficient, and reliable manner, the Committee members believe that the greatest added value that might be generated by adopting DLT in financial markets lies in the fields of infrastructure, issuance, and trading (i.e., in registries, settlements, and custodial services).

Risks

The use of novel technologies naturally involves risks, especially in the case of technologies that do not yet possess a significant track record in the capital market. Therefore, the deployment of innovative technologies into core systems must proceed in a controlled and responsible manner. These risks should be taken into consideration in developing the ISA's future steps in adopting these technologies, effectively addressing them yet without impeding their adoption.

Technology-neutral approach

It is important that the ISA, like other securities authorities worldwide, maintain a neutral approach regarding the specific technologies that its supervised entities choose to use, provided that these technologies meet the required standards, and their use is not inconsistent with regulatory goals such as prevention of money laundering, investor protection and financial stability. At the same time, the ISA should take steps to remove regulatory barriers that prevent the use of novel technologies that offer added value. Removing such obstacles may also facilitate the adoption of additional technologies that will be developed in the future.

Regulatory concerns

According to the international trends, trading and settlement platforms that became operational rather quickly were those that were established as secondary or alternative trading platforms (such as ATSs in the United States) by relatively new entities entering the industry. These entrants appear to regard themselves as high-tech ventures seeking to compete with traditional exchanges.

A comparative review of the regulatory regimes in the United States and Europe reveals a regulatory hierarchy of platforms, based on various features, including an exemption on securities exchange licensing requirements that may be issued based on limited trading volumes. In Israel, the licensing and supervisory directives in the Securities Law regarding stock exchanges were shaped by the view that exchanges constitute **significant national exchanges** that operate through its members. As a result, several of the regulatory requirements that apply to exchanges might impede the establishment of relatively small trading platforms.

The Committee identified additional regulatory issues that arise with respect to the licensing and

supervision of such trading platforms, and the ISA intends to examine practical steps to address these concerns.

Proving the benefits of technology

Many significant benefits have been attributed to DLT, yet these are for the most part theoretical, due to the early stage of DLT adoption in global capital markets. Therefore, alongside work on the regulatory aspects of technology adoption, the ISA should continue to promote studies that prove the added value of the technology, for the ISA and the entire market. Such evidence will join the already existing and extensive information that has accumulated from the meetings and reviewed documents, which might constitute a professional basis for effective action by the ISA.

Request for Information

3. In view of the uncertainty regarding the use of DLT, it is not possible to exhaustively identify all the relevant regulatory issues and obstacles. We therefore invite the public to suggest regulatory issues that might arise in promoting markets that use innovative technologies, and specifically might constitute obstacles that impede such development in Israel. Following are several guiding questions:

    a. Can you identify provisions in current regulation that are under the purview of the ISA, which might impede the development of a digital market in Israel and especially a market that is based on DLT?

    b. Can you identify unique increased risks posed by the use of this technology in the capital market, most specifically risks to securities trading and settlement, which require special regulatory consideration? What are the risks you identified and which aspects of the technology do they involve?

    c. Are there any additional use cases that might contribute to the development of the capital market?

4. We invite local and international business entrepreneurs and technology providers to contact us if they wish to:

    a. Present or demonstrate a proof of concept (POC) of specific features of DLT relevant for the development of the digital platforms/ exchanges, such as legal documentation, issuance, clearing and settlement, custodian, lowering the costs of central depository and registration. You may also consider participating in the pilot fintech program operated by the Innovation Authority and the ISA. For more information on the pilot program, please see -Link.

    b. Learn about the relevant regulatory framework in Israel and adjust their operations to the existing requirements (if necessary), and to be guided by the ISA professional team and to benefit from our oversight perspective.

Contact Persons: Mr. Asaf Erez, Mr. Guy Sabbah, and Mr. Eden Lang

Email: DigitalMarkets@isa.gov.il

Israel Securities Authority