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EFRAG Research project on Crypto-assets

Briefing paper

Objective

- 1 This paper provides information on the crypto-asset ecosystem and serves as background material to EFRAG's research project on Crypto- assets.

Structure of the paper

- 2 This paper is structured as follows:
 - (a) Introduction to crypto-assets;
 - (b) Introduction to Blockchain technology;
 - (c) Initial Coin Offerings (ICO) and Security Token Offerings (STO's);
 - (d) Do crypto-assets raise an accounting problem; and
 - (e) Market evolution.

Introduction to Crypto-assets

- 3 Crypto-assets started off as a cryptocurrency serving a peer-to-peer medium of exchange (payment) independent of a central bank that served as an alternative to government issued money (fiat currency) and rose to prominence with the launch of Bitcoin in 2009. Crypto-assets derive their name from the cryptographic security mechanisms used within public, permission-less distributed ledgers.
- 4 Since 2009, crypto-assets have gone beyond a payment system and evolved to cover other specific uses of the distributed ledger technology, which typically involve the use of crypto-tokens (or tokens).
- 5 Some crypto assets typically take the form of cryptocurrencies which function only to serve as a form of virtual currency to be exchanged in return for cash, other crypto assets, goods or services. Other forms of crypto assets, such as those issued as part of initial coin offerings (ICOs), carry other rights such as rights to future goods or services or discounted future goods or services of the entity making the ICO. Paragraphs 34 to 41 briefly explain the ICO process.

Cryptocurrencies

- 6 A cryptocurrency is a virtual or digital currency used as a medium of payment or exchange that does not exist in physical form. It is not linked to any physical currency, does not have a central depository nor it is typically backed by any government or central bank. Cryptocurrencies use decentralised control as opposed to centralised digital currency and central banking systems.
- 7 The decentralised control of each cryptocurrency works through decentralised ledger technology - typically a blockchain - that serves as a public transaction

database. Bitcoin, first released as an open-source software in 2009, is generally considered the first decentralised cryptocurrency. The blockchain technology is briefly explained in paragraphs 19 to 23 below.

- 8 Cryptocurrencies rely on distributed ledger technology (DLT), however differences occur in how these ledgers are updated. In a permissioned DLT, the ledger can only be updated by trusted participants in the cryptocurrency. In contrast, in a permissionless DLT, anybody can participate in updating the ledger. However, a consensus is necessary amongst those participants in updating the ledger.

Tokens

- 9 Tokens are designed to support a more narrowly-defined specific use of distributed ledger technology. For example, a token holder might be granted access to specific functionalities and applications that run on the distributed ledger.
- 10 Tokens have up to now been primarily issued via ICO's. Tokens have become more popular in the ecosystem.
- 11 There are currently three main categories of tokens, however these categories are not mutually exclusive but may overlap:
- (a) Payment tokens;
 - (b) Utility tokens;
 - (c) Asset-backed tokens (includes security tokens).

Payment tokens

- 12 Payment tokens are used as a means of payment for the acquisition of goods or services. These tokens are basically crypto currencies.

Utility tokens

- 13 A utility token serves to provide access to the issuer's product, service or ecosystem (including discounts on products or services) and *does not* offer the bearer any entitlement or rights of ownership. Although there might be exceptions, a typical characteristic of a utility token is that the product or service to which it is linked when it is first issued through an ICO is not yet developed or is under development. The stage of development differs from case-to-case. From an accounting perspective, it would be necessary to understand the underlying rights and obligations arising from the various utility tokens.
- 14 Utility tokens are typically issued by technology start-up companies through an ICO process with the intention to fund the development of the related product or service. After the ICO is complete, utility tokens can be listed on a cryptocurrency exchange and can be bought and traded through the exchanges.
- 15 Trading in these tokens is largely meant to have a direct correlation with the need for the product or service, the size of the user community, and the general availability of these tokens in the open market.

Security tokens (asset-backed tokens)

- 16 Unlike utility tokens, security tokens give their holders to ownership rights of a company (ie they are asset-backed). The development of security tokens has become a much talked about topic in the last few months. However, it appears that some jurisdictions, like the USA, have been discussing security tokens for longer.
- 17 Security tokens are backed by an existing asset (like real estate or an already developed product). In the USA, a crypto token that passes the so-called Howey Test is deemed a security token. These usually derive their value from an external, tradable asset.

- 18 Some argue that security tokens can be utilised to change conventional IPOs (initial public offerings) and issue company shares, profits, and voting rights over the blockchain frameworks. This because they are a cheaper and easier way to fund the project especially for smaller start-up companies.

Introduction to the blockchain technology¹

- 19 Crypto-assets are recorded on a distributed ledger (a blockchain) that is used to store the data and serves as a public financial transaction database. The distributed ledger is maintained by software which runs on what are known as 'core nodes'.
- 20 To maintain the distributed ledger, the network relies on widely dispersed nodes which perform the complex cryptographic calculations in order to verify transaction data occurring between the users of crypto assets, in the case of some crypto assets, increasing the overall supply in circulation. These nodes maintain the blockchain network are operated by individuals and corporate entities; collectively referred to as 'miners' or 'validators'.
- 21 The validity of crypto-assets is provided by a blockchain - a continuously growing list of records, called blocks, which are linked and secured using cryptography. Each block typically contains a hash pointer as a link to a previous block, a timestamp and transaction data. By design, blockchains are immutable. It is "an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way".
- 22 For use as a distributed ledger, a blockchain is typically managed by a peer-to-peer network collectively adhering to a protocol for validating new blocks. Once recorded, the data in any given block cannot be altered retroactively without the alteration of all subsequent blocks, which requires collusion of the network majority. Blockchains are intended to solve the problem of doing the same transaction twice without the need of a trusted authority or central server, assuming no so-called '51% attack'.
- 23 The blockchain technology, including the distributed ledger technology, remains in its infancy, and although there seems to an increasing number of companies focusing on blockchain technology, it has not (yet) gained widespread adoption other than for development and investment purposes. There are different views on the timeline for widespread adoption (ranging from 2-5 years), depending on the jurisdiction, regulation and other factors.

Validation

- 24 Crypto-assets use various timestamping schemes to "prove" the validity of transactions (validation schemes) added to the blockchain ledger without the need for a trusted third party. There are currently two main validation processes – (a) proof-of-work and (b) proof-of-stake.
- 25 The first validation scheme invented was the proof-of-work scheme.² If this system, network participants compete to be the fastest to solve the cryptographic puzzles requires to add a new block to the blockchain. When the puzzle is solved and there is proof that the work has been completed, the machine or 'miner' is rewarded with a token of value. Proof-of-work is also referred to as a 'mining' system.
- 26 The miners' reward is thus the allocation of extra tokens or coins, in addition to transaction costs that are charged. Once all coins or tokens are mined, the only

¹ Information mainly taken from Wikipedia

² A security token's value is derived from a tradable asset; subsequently, it is liable to government laws controlling traditional securities. Security tokens can be utilised to change conventional IPOs(initial public offerings) and issue company shares, profits, and voting rights over the blockchain frameworks

reward remaining are the transaction costs. Proof of work is a costly method due to the large amounts of hardware and energy required. Hence, the evolution versus DLTs that are based on a proof of stake method.

- 27 The proof-of-stake is a method of securing a cryptocurrency network and achieving distributed consensus (and thus validation) through requesting users to show ownership of a certain amount of currency. The scheme is largely dependent on the coin, and there's currently no standard form of it. Some cryptocurrencies use a combined proof-of-work/proof-of-stake.

Crypto-asset wallets

- 28 A crypto-asset wallet are software and are used to view cryptocurrency balances and make transactions. A wallet stores the public and private 'keys' or 'addresses' which can be used to store, receive, or send the crypto-asset.
- 29 Public 'addresses' are like cryptocurrency-specific account numbers, they are used to receive certain type of cryptocurrency and can be shared publicly. Proving the 'address' is done with a private 'key' (a secret code associated with a public address) in non-custodial wallets. In custodial wallets it is just a matter of in-putting your password. The loss of a private 'key' can result in a loss of the crypto-assets.

Transactions fees³

- 30 A user of a network who wants a transaction to be processed needs to pay transactions cost to the miners or the proof of stake validators in order to validate a transaction.
- 31 Transaction fees for cryptocurrency depend mainly on the supply of network capacity at the time, versus the demand from the currency holder for a faster transaction.
- 32 The currency holder can choose a specific transaction fee, while network entities process transactions in order of highest offered fee to lowest. Crypto-asset exchanges can simplify the process for currency/token holders by offering priority alternatives and thereby determine which fee will likely cause the transaction to be processed in the requested time.

Mining

- 33 Mining of cryptocurrencies relates to individuals and organisations using their own mining equipment to process transactions and earn the mining reward and transaction fees.

Initial Coin Offerings (ICO's) and Security Token Offerings (STO's)

Initial Coin Offering (ICO)

- 34 An initial coin offering (ICO) is a means of raising funds for a new crypto-asset venture. An ICO may be used by startups with the intention of avoiding regulation. In an ICO campaign, a percentage of the cryptocurrency (usually in the form of tokens) is sold to early supporters of the project in exchange for legal tender or other cryptocurrencies, often bitcoin or ether. In 2017, the most popular industries for ICO's were banking and payments, marketing and advertising, blockchain infrastructure, financial services and gaming.
- 35 ICO's could potentially affect most industries, although publicly available data (crypto-asset websites, academic reports etc.) indicates that financial services leads the space. Despite their fund-raising success in the last few years, ICO's have also faced many challengers including several cases of unlawful practices and scams

³ Data extracted from Wikipedia.

and given the lack of a legal and regulatory framework in most jurisdictions, led to investors' losses with no legal or regulatory protection.

- 36 According to PricewaterhouseCoopers⁴, four of the 10 biggest proposed initial coin offerings have used Switzerland as a base, where they are frequently registered as non-profit foundations.
- 37 To summarise, some key characteristics of an ICO are⁵:
- (a) It is a terminology typically used to refer to distribution and sale of crypto-assets (in the form of tokens). As such ICO's are used to collect funding;
 - (b) Owning tokens does not always give the investor (or holder) a right to vote on the direction of a project, with the rights of the investor embedded within the structure of the ICO, though generally the investor community can significantly influence and provide inputs throughout a project's lifespan;
 - (c) It typically involves the creation of a finite number of tokens prior to sale with clearly defined allocations for the distribution and a roadmap for use of funds thus raised. The road map is typically explained in a so-called 'White paper'. A whitepaper is a document that outlines a problem along with the solution, i.e., the purpose of the project by the company raising an ICO. It details exactly how this proposed product or service or technology works or is intended to work when developed.
 - (d) Token prices for an ICO are usually established by the issuers.
 - (e) An ICO typically consists of multiple rounds of fund raising, with the tokens on offer increasing in value until the release date, and early investors likely to have more rewards embedded within their tokens as an incentive.
 - (f) An exchange listing frequently follows the ICO, which makes the token tradable in the open market.
- 38 Initial coin offerings are sometimes analogised to initial public offerings (IPOs). Both offer mechanisms for organisations to sell a set of rights to a large public audience in exchange for value. However, ICOs and IPOs vary greatly in regulation, disclosure requirements, the rights attached to tokens, legal implications and risks.

Security Token Offerings (STO).

- 39 A Security Token Offering (STO) is the mechanism used to issue a security token (an asset-backed token). In recent months, STO's have been picking up mainly because of the increasing oversight and regulation on ICO's and also because of potential loss in investor confidence in ICO's given that some studies show that more than 80 percent of ICO's issued in 2017 were identified as scams or failed.
- 40 However, a study issued by Inwara (www.inwara.com) shows that in 2018 the number of STOs in any quarter is still much smaller than the corresponding number of ICOs. Security Tokens (STOs) are deemed as securities since they come with a conjecture of tradable assets that are subjected to federal regulations and compliances (in most jurisdictions). The crackdown on a few ICOs has resulted in erosion of investor confidence and this has been widely touted to be the reason for the rise of STOs.
- 41 It is expected that STO's will attract high levels of investor attention in 2019 and beyond given their nature and existing regulatory environment.

⁴ PWC (India) publication *Initial Coin Offering (ICO) – A crypto-World Introductory Series* published in 2018.

⁵ PWC (India) publication *Initial Coin Offering (ICO) – A crypto-World Introductory Series* published in 2018

Do crypto-assets raise an accounting problem?

- 42 Current IFRS Standards do not provide specific guidance on the accounting for crypto-assets or activities generated by crypto-assets. Crypto-assets have diverse terms and conditions, can be acquired in different ways (mined, acquired through an ICO or exchanged through an exchange) and generally have different roles and purposes (payment or to receive goods or services). Hence the accounting treatment will depend on the particular facts and circumstances, and thus, the analysis could be complex.
- (a) Cash and cash equivalents – In order to be considered cash, a crypto-asset would need to be generally accepted as a medium of exchange that is supported by government and recognised as legal.
 - (b) Financial assets under IFRS 9 *Financial Instruments* – Some contractual crypto-assets could meet the definition of a financial instrument if: they entitle the holder to cash, another financial instrument, or the right to trade financial instruments under favourable terms; or they represent in essence electronic share certificates that entitle the holder to the net assets of a particular entity. It is therefore possible that a security token or some security tokens could fit the definition of a financial asset.
 - (c) Derivatives under IFRS 9 – Some contracts to trade crypto-assets could meet the definition of a derivative if certain criteria are met.
 - (d) Inventory under IAS 2 *Inventories* - Some entities could hold crypto-assets for sale in the ordinary course of business and, as such, would be able to recognise these as inventory.
 - (e) Intangible assets under IAS 38 *Intangible Assets* - Many crypto-assets are likely to meet the broad definition of an intangible asset, although some might not be within the scope of IAS 38 (if they are in the scope of another IFRS Standard).
 - (f) Revenue recognition for ICO's or STO's: upon issuance, the collected coins or tokens may result in deferred income for the entity, a repayable debt, or other liabilities that result in a future cost for the entity.

Standard-setting initiatives on the accounting for crypto-assets

IASB

- 43 The IFRS Interpretations Committee (IFRS IC) discussed the accounting for crypto-assets at its meetings in July and September 2018. The discussions responded to a request from the IASB to advise on the accounting for holdings of cryptocurrencies and ICOs under IFRS Standards.
- 44 The IASB staff performed a keyword search of financial statements issued by publicly-listed IFRS reporters that report holdings of cryptocurrencies in the most recent interim reports (2018) or annual (2017) financial statements. The search was limited to financial statements written in English and identified the existence of cryptocurrencies holdings in the financial statements (including the notes).
- 45 In total the IASB staff identified only 37 companies reporting holdings in cryptocurrencies. On this basis, the IASB staff concluded that IFRS reporters with holdings of cryptocurrencies were not prevalent at this stage.
- 46 At its meeting in November 2018, the IASB discussed the findings of the IFRS IC. The IASB decided not to add to its work plan a project on holdings of cryptocurrencies or initial coin offerings at this time. Instead, the IASB decided to monitor the development of crypto-assets. The IASB also decided to ask the IFRS IC to consider publishing an agenda decision that would explain how entities apply

existing IFRS Standards to holdings of cryptocurrencies. At the time of writing the IFRS IC has not discussed an agenda decision.

Other national accounting standard setter initiatives

- 47 In April 2018, the Accounting Standards of Japan (ASBJ) published a Standard of the accounting for virtual currencies under Japanese GAAP. The ASBJ standard covers primarily the accounting for 'holding of virtual currencies' and excludes from its scope mining and ICO activities.
- 48 In 2018, the French Standard Setter (ANC) issued guidance about the accounting for ICO's dealing with the accounting for issuers and holders of tokens.
- 49 In 2018, the Dutch Standard Setter issued an Expression with the aim of serving as an opinion paper on the accounting of cryptocurrencies. This Expression, which does not have the status of guidance, discusses the situations when cryptocurrencies are identified as either intangible fixed assets, inventory or other investments.
- 50 The Lithuanian Authority of Accounting, Audit, Property Valuation and Insolvency recently issued extensive guidance on the accounting for crypto-assets under local GAAP in line with local regulations. This guidance addresses the following:
- (a) Accounting of cryptocurrencies used as payment
The guidance is dealing with the acquisition and sale of cryptocurrencies for payment purposes, investing in cryptocurrencies and mining.
 - (b) Accounting of ICO tokens; and
The guidance is dealing with the circulation and the acquisition of cryptocurrency tokens and differentiates between payment, utility and security tokens.
 - (c) Accounting for intermediaries on the cryptocurrencies market.
The guidance provides accounting entries for performing intermediary services on the cryptocurrencies market between buyers and sellers.
- 51 Other European and non-European standard-setters have discussed initiatives to develop accounting standards under local GAAP. An overview of the current (and known) initiatives was provided to the EFRAG Board at its meeting in October 2018 at the request of the EFRAG Board.

Market evolution

- 52 During 2017, the crypto-asset market climbed from USD 18 billion in January 2017 to USD 800 billion in January 2018. However, the prices across the entire crypto-asset ecosystem started to tumble in January 2018, and despite some rebounds during the course of 2018, the market remains below USD 130 billion at the time of writing.
- 53 Regardless of the decline, the number of crypto-assets has continued to increase with over 5000 coins in circulation in January 2019 trading in approximately 200 exchanges around the world.⁶

⁶ Taken from Coinranking website on 18 January 2019.

- 54 The top four crypto-assets represent approximately 70 percent of the total market cap.⁷

CRYPTOCURRENCY	MARKET CAP	% OF MARKET CAP	COMMENCEMENT DATE
BITCOIN		48.9	2009
XRP (RIPPLE)		10.3	2015
ETHEREUM		9.7	2015
BITCOIN CASH		1.7	2017
OTHERS		29.3	Ongoing since 2009

- 55 According to data published by Inwara (a crypto-asset public website) there were approximately 1250 ICO's in 2018 compared to approximately 500 in 2017. The ICO funds raised in 2018 amounted to approximately USD 20 billion, versus USD 7 billion in 2017.
- 56 The USA sustained the top position with 60 percent hike in ICO numbers. The UK and Singapore saw over 180% growth in number of ICOs in 2018, and other parts of Europe also posted strong numbers in 2018 with Switzerland, Estonia, Germany and Austria leading the charge with each posting 100+ percentage increases.
- 57 The Inwara data is consistent with data published in an article by PwC (India) in June 2018 that stated that for the first half of June 2018:
- "In total, 537 ICOs with a total volume of more than \$13.7 billion have been registered since the beginning of the year. In comparison, in 2017 there were a total of 552 ICOs with a volume of just over \$7.0 billion. Also, the average size of an ICO has almost doubled from \$12.8 million to over \$25.5 million since last year. "*
- 58 At this stage, the EFRAG Secretariat has not verified this data against other publicly available crypto data-centres (such as Coindesk, Coinmarketcap etc) or other sources.
- 59 Based on preliminary research done by the EFRAG Secretariat, the indication is as at the end of 2017, there were very few listed European companies reporting crypto-asset activities in their 2017 IFRS interim and annual financial statements, including ICO activities.

⁷ Taken from Coinranking website on 20 January 2019.